Last update: 05-04-10 DRAFT

Substance	CASRN	Precursor Effect / Tumor Type
1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride		
1,1,1,2-Tetrachloro-2-fluoroethane		Hepatocellular adenoma or carcinoma
1,1,1,2-Tetrachloroethane	630-20-6	
1,1,1,2-Tetrafluoroethane	811-97-2	
1,1,1-Trichloroethane	71-55-6	
1,1,2,2-Tetrachloro-1-fluoroethane		Hepatocellular carcinoma
1,1,2,2-Tetrachloroethane	79-34-5	
1,1,2-Trichloro-1,2,2-trifluoroethane (CFC-113)	76-13-1	
1,1,2-Trichloroethane	79-00-5	Hepatocellular carcinoma
1,1,2-Trichloropropane	598-77-6	
1,1-Biphenyl	92-52-4	
1,1-Dichloro-1,2,2-Trifluoroethane		

1,1-Dichloro-1-fluoroethane	
1,1-Dichloroethane	75-34-3
1,1-Dichloroethene	
1,1-Dichloroethylene (1,1-DCE)	75-35-4
1,1-Difluoroethane	75-37-6
1,1-Dimethyl Hydrazine	57-17-4
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001-02-0
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4
1,2,3-Trichlorobenzene	87-61-6
1,2,3-Trichloropropane	96-18-4
1,2,4,5-Tetrachlorobenzene	95-94-3
1,2,4-Tribromobenzene	615-54-3

1,2,4-Trichlorobenzene	120-82-1	
1,2,4-Trimethylbenzene		
1,2-Butylene oxide		
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	
1,2-Dibromoethane	106-93-4	Forestomach tumors, hemangiosarcomas, thyroid follicular cell adenomas or carcinomas
1,2-Dichloro-1,1,2-trifluoroethane		
1,2-Dichloro-1,1-difluoroethane		
1,2-Dichlorobenzene	95-50-1	

1,2-Dichloroethane	107-06-2	Hemangiosarcomas
1,2-Dichloroethene, cis		
1,2-Dichloroethene, trans-		
1,2-Dichloroethylene	540-59-0	
1,2-Dichloropropane	78-87-2	
1,2-Diphenylhydrazine	122-66-7	Hepatocellular carcinomas and neoplastic liver nodules
1,2-Epoxybutane (EBU)	106-88-7	
1,2-Phenylenediamine		
1,3,5-Trimethylbenzene	108-67-8	
1,3,5-Trinitrobenzene	99-35-4	
1,3-Butadiene	106-99-0	

1,3-Dichloro-1,1,2,2,3-Pentafluoropropane		
1,3-Dichlorobenzene	541-73-1	Urinary bladder carcinoma (NTP, 1985); hepatocellular adenoma/ carcinoma (NTP, 1985; Stott et al., 1995)
1,3-Dichloropropene	542-75-6	
1,3-Dichloropropylene		
1,3-Phenylenediamine		
1,4-Dibromobenzene	106-37-6	
1,4-Dichloro-2-butene		
1,4-Dichlorobenzene	106-46-7	Squamous cell carcinoma of the nasal turbinates
1,4-Dioxane	123-91-1	
1,4-Dithiane	505-29-3	
1,6-Hexamethylene diisocyanate	822-06-0	
1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile		
1-Chloro-1,1,2,2-tetrafluoroethane		
1-Chloro-1,1-difluoroethane	75-68-3	
1-Chlorobutane	109-69-3	
1-Hydroxybenz[a]antracene	69847-26-3	
1-Hydroxybenzo[c]phenanthrene		
1-Hydroxychrysene	63019-38-5	
1-Hydroxynaphthalene	90-15-3	

1-Hydroxyphenanthrene	2433-56-9
1-Hydroxypyrene	5315-79-7
1-Methylnaphthalene	
2(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP)	93-72-1
2-(2-Methyl-4-chlorophenoxy)propionic acid (MCPP)	93-65-2
2-(Diethylamino)-6-methylpyrimidin-4-ol/one	
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (PCB 206)	40186-72-9
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)	35694-08-7
2,2',3,3',4,4',5,6- and 2,2',3,4,4',5,5',6-Octachlorobiphenyl (PCB 196 & 203)	42740-50-1 & 52663-76-0
2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB 195)	52663-78-2
2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB 170)	35065-30-6
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	38380-07-3
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (PCB 199)	52663-75-9
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	52663-74-8
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	52663-70-4
2,2',3,3',5,5',6-Heptachlorobiphenyl (PCB 178)	52663-67-9
2,2',3,4,4',5'- and 2,3,3'4,4',6-Hexachlorobiphenyl (PCB 138 & PCB 158)	35065-28-2 & 74472-42-7
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	35065-29-3
2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB 183)	52663-69-1
2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB 187)	52663-68-0
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	51908-16-8
2,2',3,4',5',6-Hexachlorobiphenyl (PCB 149)	38380-04-0
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	38380-02-8
2,2',3,5,5',6-Hexachlorobiphenyl (PCB 151)	52663-63-5
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	35065-27-1
2,2',4,4',5-Pentachlorobiphenyl (PCB 99)	38380-01-7
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	37680-73-2
2,2,4-Trimethylpentane	540-84-1
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	35693-99-3
2,2-Dichloro-1,1,1-trifluoroethane	
2,2'-Oxybis(1-chloropropane)	
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	38380-08-4

2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	69782-90-7	
2,3,3',4,4'5,5'-Heptachlorobiphenyl (PCB 189)	39635-31-9	
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	32598-14-4	
2,3,3',4',6-Pentachlorobiphenyl (PCB 110)	38380-03-9	
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	52663-72-6	
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	31508-00-6	
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	32598-10-0	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	
2,3,4,6-Tetrachlorophenol	58-90-2	
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	
2,3-Dichloropropanol	616-23-9	
2,3-Dichloropropene		
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	32690-93-0	
2,4,4'-Trichlorobiphenyl (PCB 28)	7012-37-5	
2,4,5-Trichlorophenol	95-95-4	
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	93-76-5	
2,4,6-Trichlorophenol	88-06-2	Leukemia Urinary bladder, transitional cell papilloma and transitional squamous cell carcinoma
2,4,6-Trinitrotoluene (TNT)	118-96-7	s
2,4-/2,6-Dinitrotoluene mixture	NOCAS	
2,4-/2,6-Toluene diisocyanate mixture (TDI)	26471-62-5	
2,4-D 2-Ethylhexyl ester		
2,4-D Butoxyethyl ester		

2,4-D Isopropyl Ester	
2,4-D Sodium salt	
2,4-DB	
2,4-Diaminotoluene	95-80-7
2,4-Dichlorophenol	120-83-2
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7
2,4-Dimethylphenol	105-67-9
2,4-Dinitrophenol	51-28-5
2,4-Dinitrotoluene	121-14-2
2,4-Dithiobiuret	
2,4-DP	
2,5-Dichlorophenol	583-78-8
2,6-Dimethylphenol	576-26-1
2,6-Dinitrotoluene	606-20-2
2,6-Xylidine	
2-Acetylaminofluorene	53-96-3
2-Butanone	
2-Chloro-1,1,1,2-tetrafluoroethane	
2-Chloro-1,1,1-trifluoroethane	
2-Chloroacetophenone	532-27-4
2-Chlorobutane	78-86-4
2-Chloronaphthalene	
2-Chlorophenol	95-57-7
2-Ethoxyethanol	110-80-5
2-Hexanone	591-78-6
2-Hydroxybenzo[c]phenanthrene	22717-94-8
2-Hydroxychrysene	65945-06-4
2-Hydroxyfluorene	2443-58-5
2-Hydroxynaphthalene	135-19-3
2-Hydroxyphenanthrene	
2-Isopropoxyphenol	4812-20-8
2-Isopropyl-4-methyl-6-hydroxypyrimidine	
2-Mercaptobenzothiazole	2814-20-2
2-Methoxyethanol	109-86-4
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	94-74-6
2-Methyllactonitrile	
2-Methylnaphthalene	91-57-6

2-Methylphenol	95-48-7	
2-Methylpyridine		
2-Nitroaniline		
2-Nitrophenol		
2-Nitropropane	79-46-9	
2-Phenylphenol		
3- and 9-Hydroxybenz[a]anthracene	4834-35-9 (3-)	
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	32774-16-6	
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	57465-28-8	
3,3-Dichloro-1,1,1,2,2-pentafluoropropane		
3,3'-Dichlorobenzidine	91-94-1	Mammary adenocarcinoma
3,3'-Dichlorobenzidine dihydrochloride		
3,3'-Dimethoxybenzidine		
3,3-Dimethylbenzidine	119-93-7	
3,3'-Dimethyoxybenzidine dihydrochloride		
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	70362-50-4	
3,4-Dimethylphenol	95-65-8	
3,5,6-Trichloro-2-pyridiniol	6515-38-4	
3-Chloro-2-methyl-1-propene		
3-Chloro-7-hydroxy-4-methyl-2H-chromen-2-one/ol		
3-Chloropropionitrile		
3-Hydroxybenzo[a]pyrene	13345-21-6	
3-Hydroxybenzo[c]phenanthrene		
3-Hydroxycarbofuran	16655-82-6	
3-Hydroxychrysene	63019-39-6	
3-Hydroxyfluoranthene		
3-Hydroxyfluorene	6344-67-8	
3-Hydroxyphenanthrene	605-87-8	
3-Iodo-2-propynyl butylcarbamate		
3-Methylphenol	108-39-4	
3-Nitroaniline		
3-Phenoxybenzoic acid	3739-38-6	
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)	94-82-6	

4-(2-Methyl-4-chlorophenoxy) butyric acid (MCPB)	94-81-5	
4,4'-Diaminodiphenyl ether		
4,4'-Isopropylidenediphenol		
		Thyroid, follicular cell carcinoma/ adenoma
4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	
4,4'-Methylenebis(2-chloroaniline)	101-14-4	
4,4'-Methylenedianiline	101-77-9	
4,6-Dinitro-2-methylphenol		
4,6-Dinitro-o-cresol	534-52-1	
4,6-Dinitro-o-cyclohexyl phenol	131-89-5	
4-Aminoazobenzene		
4-Aminobiphenyl	92-67-1	
4-Aminopyridine	504-24-5	
4-Bromophenyl-phenylether		
4-Chloro-3-methylphenol		
4-Chloroaniline		
4-Chlorophenyl-phenylether		
4-Dimethylaminoazobenzene		
4-Fluoro-3-phenoxybenzoic acid	77279-89-1	
4-Hydroxychrysene	63019-40-9	
4-Hydroxyphenanthrene	7651-86-7	
4-Methyl-2-pentanone	108-10-1	
4-Methylphenol	106-44-5	
4-Nitroaniline		
4-Nitrobiphenyl	92-93-3	
5-Nitro-o-toluidine		
6-Hydroxychrysene	37515-51-8	
9-Hydroxyfluorene	1689-64-1	
9-Hydroxyphenanthrene	484-17-3	
Abamectin		
Acenaphthene	83-32-9	
Acenaphthylene	208-96-8	

Acephate	30560-19-1	Liver adenomas and carcinomas
Acetaldehyde	75-07-0	
Acetamide	60-35-5	
Acetochlor	34256-82-1	
Acetochlor ethanesulfonic acid (ESA)	187022-11-3	
Acetochlor oxanilic acid (OA)	184992-44-4	
Acetone	67-64-1	
Acetonitrile	75-05-8	
Acetophenone	98-86-2	
Acetyl chloride	75-36-5	
Acifluorfen, sodium	62476-59-9	
Acrolein	107-02-8	
Acrylamide	79-06-1	Thyroid tumors and tunica vaginalis mesotheliomas
Acrylic acid	79-10-7	

Acrylonitrile	107-13-1	Brain and spinal cord astrocytomas, Zymbal gland carcinomas and stomach papillomas / carcinomas
Actinium-227	14952-40-0	
Adiponitrile	111-69-3	
Alachlor	15972-60-8	
Alachlor ethanesulfonic acid (ESA)	142363-53-9	
Alachlor oxanilic acid (OA)	171262-17-2	
Alar	1596-84-5	
Aldicarb	116-06-3	
Aldicarb sulfone	1646-88-4	
Aldrin	309-00-2	Liver carcinoma
Alkylates		
Ally	74223-64-6	
Allyl alcohol	107-18-6	
Allyl chloride	107-05-1	
Allylamine		
alpha-Chlordane		
alpha-Chlordene	56534-02-2	

alpha-Hexachlorocyclohexane (alpha-HCH)	319-84-6	Hepatic nodules and hepatocellular carcinomas
alpha-Naphthylamine		
Aluminum (fume or dust)		
Aluminum oxide (fibrous forms)		
Aluminum phosphide	20859-73-8	
Amdro	67485-29-4	
Americum	7440-35-9	
Americum-241	86954-36-1	
Ametryn	834-12-8	
Amitraz	33089-61-1	
Amitrole		

Ammonia	7664-41-7
Ammonium acetate	631-61-8
Ammonium methacrylate	16325-47-6
Ammonium sulfamate	7773-06-0
Amosite asbestos	12172-73-5

		Spleen, combined fibrosarcoma, stromal sarcoma, capsular sarcoma and hemangiosarcoma
Aniline	62-53-3	
Anthracene	120-12-7	
Antimony	7440-36-0	
Antimony Compounds		
Antimony trioxide	1309-64-4	
Apollo	74115-24-5	
		Neoplastic liver nodules and carcinomas
Aramite	140-57-8	
Aroclor	12767-79-2	
Aroclor 1016	12674-11-2	
Aroclor 1221	11104-28-2	
Aroclor 1232	11141-16-5	
Aroclor 1240	71328-89-7	
Aroclor 1242	53469-21-9	
Aroclor 1248	12672-29-6	
Aroclor 1254	11097-69-1	
Aroclor 1260	11096-82-5	
Aroclor-1262		
Aroclor-1268		
Arsenic acid	7778-39-4	
Arsenic Compounds		
Arsenic trioxide	1327-53-3	

Arsenic, inorganic	7440-38-2	Skin cancer
Arsine	7784-42-1	
Asbestos	1332-21-4	
Assure	76578-14-8	
Asulam	3337-71-1	
Atrazine	1912-24-9	
Avermectin B1	65195-55-3	

Azobenzene	103-33-3	Abdominal cavity sarcomas
Barium and Compounds	7440-39-3	
Barium cyanide	542-62-1	
Baygon	114-26-1	
Bayleton	43121-43-3	
Baythroid	68359-37-5	
Bendiocarb		
Benefin	1861-40-1	
Benfluralin		
Benomyl	17084-35-2	
Bensulide	741-58-2	
Bentazon (Basagran)	25057-89-0	
Benz[a]anthracene	56-55-3	
Benzal chloride		
Benzaldehyde	100-52-7	
Benzene	71-43-2	Leukemia
Benzidine	92-87-5	Bladder tumors
Benzo(a)anthracene	56-55-3	

Benzo[a]pyrene (BaP)	50-32-8	Forestomach, squamous cell papillomas and carcinomas; forestomach, larynx and esophagus, papillomas and carcinomas (combined)
Benzo[b]fluoranthene	205-99-2	
Benzo[g,h,i]perylene	191-24-2	
Benzo[k]fluoranthene	207-08-9	
Benzofluoranthene	56832-73-6	
Benzoic acid	65-85-0	
Benzotrichloride	98-07-7	Lung, adenocarcinoma
Benzoyl chloride		
Benzoyl peroxide		
Benzyl chloride	100-44-7	Thyroid, C-cell adenoma/carcinoma
Beryllium and compounds	7440-41-7	
beta-Chloronaphthalene	91-58-7	

beta-Hexachlorocyclohexane (beta-HCH)	319-85-7	Hepatic nodules and hepatocellular carcinomas
beta-Naphthylamine		
beta-Propiolactone	57-57-8	
beta-Propiolactone		
Bidrin	141-66-2	
Biphenthrin	82657-04-3	
Bis(2-chloro-1-methylethyl) ether	111-91-1	
Bis(2-chloroethoxy)methane	108-60-1	
Bis(2-ethylhexyl)adipate		
Bis(2-methoxyethyl)phthalate		
Bis(chloroethyl)ether (BCEE)	111-44-4	Hepatomas
Bis(chloromethyl)ether (BCME)	542-88-1	Respiratory tract tumors
Bis(tributyltin) oxide		
Bisphenol A	80-05-7	
Boron and Compounds	7440-42-8	
Boron trichloride		
Boron trifluoride		
Bromacil		

Bromate	15541-45-4	Testicular mesothelioma, renal tubular adenoma and carcinoma, and thyroid follicular cell adenoma and carcinoma
Brominated dibenzofurans	NOCAS	
Bromine	7726-95-6	
Bromobenzene	108-86-1	

Bromochlorodifluoromethane		
Bromochloromethane	74-97-5	
Bromodichloroethane		
Bromodichloromethane	75-27-4	Kidney (tubular cell adenoma and tubular cell adenocarcinoma)
Bromoform	75-25-2	Neoplastic lesions in the large intestine
Bromomethane	74-83-9	
Bromotrichloromethane	75-62-7	
Bromotrifluoromethane		
Bromoxynil	1689-84-5	
Bromoxynil octanoate	1689-99-2	
Brucine		
Butyl acrylate		
Butyl benzyl phthalate	85-68-7	
Butylate	2008-41-5	
Butylated hydroxyanisole	25013-16-5	
Butylphthalyl butylglycolate (BPBG)	85-70-1	
Butyraldehyde		
C.I. Basic Green 4		
C.I. Basic red 1		
C.I. direct blue 218		
C.I. Food Red 15		
C.I. Solvent Orange 7		
C.I. Solvent Yellow 34		
Cacodylic acid	75-60-5	
Cadmium	7440-43-9	
Cadmium Compounds		
Calcium		

Calcium arsenate		
Calcium Cyanamide	156-62-7	
Calcium cyanide	592-01-08	
Caprolactam	105-60-2	
Captafol	2425.06.1	
Captan	133-06-2	
Carbaryl	63-25-2	
Carbazole		
Carbofuran	1563-66-2	
Carbofuranphenol	1563-38-8	
Carbon disulfide	75-15-0	
Carbon Monoxide	630-08-0	
Carbon tetrachloride	56-23-5	Hepatocellular adenoma or carcinoma
Carbonyl sulfide	463-58-1	
Carbophenothion	786-19-6	
Carbosulfan	55285-14-8	
Carboxin	5234-68-4	
Catechol	120-80-9	

Cerium oxide	1306-38-3	
Certain glycol ethers		
Cesium	7440-46-2	
Cesium-137	10045-97-3	
Chloral hydrate	302-17-0	
Chloramben	133-90-4	
Chlordane	12789-03-6	
Chlordane (Technical)	12789-03-6	Hepatocellular carcinoma
Chlordecone		Liver hepat
Chlorimuron ethyl	90982-32-4	
Chlorinated dioxins		
Chlorine	7782-50-5	
Chlorine cyanide	506-77-4	

Chlorine dioxide	10049-04-4
Chlorite (sodium salt)	7758-19-2
Chloroacetic acid	79-11-8
Chlorobenzene	108-90-7
Chlorobenzilate	510-15-6
Chlorocyclopentadiene	41851-50-7
Chlorodifluoromethane	75-45-6
Chloroethane	75-00-3
Chloroform	67-66-3
Chloromethyl methyl ether (CMME)	107-30-2
Chlorophenols	
Chloropicrin	
Chloroprene	126-99-8
Chlorotetrafluoroethane	63938-10-3
Chlorothalonil	1897-45-6
Chlorotrifluoromethane	
Chlorpropham	101-21-3
Chlorpyrifos	2921-88-2
Chlorpyrifos methyl	
Chlorsulfuron	64902-72-3
Chromium	7440-47-3
Chromium (VI) oxide	

Chromium Compounds (except chromite ore mined in the Transvaal region)	
Chromium trioxide	1333-82-0
Chromium(III), insoluble salts	16065-83-1
Chromium(VI)	18540-29-9
Chrysene	218-01-9
Chrysotile asbestos	12001-29-5
cis-1,2-Dichloroethylene	156-59-2
cis-3-(2,2-dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid	
cis-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	55701-05-8
Cis-chlordane	5103-71-9
Clethodim	110429-62-4
Coal tar pitch	65996-93-2
Cobalt	7440-48-4
Cobalt Compounds	
Coke oven emissions	8007-45-2
Copper	7440-50-8
Copper compounds	
Copper cyanide	544-92-3
Cotinine	486-56-6
Creosote	8001-58-9
Crotonaldehyde	123-73-9
Cumene	98-82-8
Cumene Hydroperoxide	80-15-9
Cupferron	
Cyanazine	21725-46-2
Cyanide Compounds	
Cyanide, free	57-12-5
Cyanogen	460-19-5
Cyanogen bromide	506-68-3
Cyanotoxins	
Cyclohexane	110-82-7
Cyclohexanol	
Cyclohexanone	108-94-1
Cyclohexylamine	108-91-8

Cyclotrimethylenetrinitramine (RDX)		
Cyfluthrin		
Cyhalothrin/Karate	68085-85-8	
Cypermethrin	52315-07-8	
Cyromazine	66215-27-8	
Dacthal	1861-32-1	
Daidzein	486-66-8	
Dalapon, sodium salt	127-20-8	
Danitol	39515-41-8	
Dazomet	533-74-4	
Dazomet, sodium salt	53404-60-7	
Decabromodiphenyl ether (DBDPE)	1163-19-5	Liver neopl
Decabromodiphenyl oxide		
delta-Hexachlorocyclohexane (delta-HCH)	319-86-8	
Demeton	8065-48-3	
Desmedipham		
Di (2-ethylhexyl)phthalate (DEHP)	117-81-7	Hepatocellular carcinoma and adenoma Combined hepatocellular adenomas and carcinomas
Di(2-ethylhexyl)adipate	103-23-1	
Diallate		
Diaminotoluene (mixed isomers)		
Diazinon	333-41-5	
Diazomethane	334-88-3	
Dibenz[a,h]anthracene	53-70-3	
Dibenzofuran	132-64-9	
Dibenzofurans, chlorinated		

		Hepatocellular adenoma or
Dibromochloromethane	124-48-1	carcinoma
Dibromochloropropane	67708-83-2	
Dibromodichloromethane	594-18-3	
Dibromotetrafluoroethane	124-73-2	
Dibutyl phthalate	84-74-2	
Dicamba	1918-00-9	
Dichloran		
		Hepatoadenoma and Hepatocar
Dichloroacetic acid	79-43-6	cinoma
Dichlorobenzene (mixed isomers)	25321-22-6	
Dichlorobromomethane		
Dichlorodifluoromethane	75-71-8	
Dichloroethane	1300-21-6	
Dichlorofluoromethane		
		Hepatocellular adenomas or carcinomas (NTP) and hepatocellular cancer and neoplastic nodules
Dichloromethane	75-09-2	(NCA)
Dichloropentafluoropropane		
Dichlorotetrafluoroethane (CFC-114)		
Dichlorotrifluoroethane		

Dichlorvos	62-73-7	Forestomach tumors, pancreatic acinar adenoma, leukemia
Dicofol	115-32-3	
Dicyclopentadiene		
Dieldrin	60-57-1	Liver carcinoma
Diepoxybutane		
Diesel engine exhaust	NOCAS	
Diethanolamine	111-42-2	
Diethyl phthalate	84-66-2	
Diethyl sulfate	64-67-5	
Diethyldithiophosphate	298-06-6	
Diethylene glycol dinitrate (DEGDN)	693-21-0	
Diethylphosphate	598-02-7	
Diethyl-p-nitrophenylphosphate	311-45-5	
Diethylthiophosphate	2465-65-8	
Difenzoquat	43222-48-6	
Diflubenzuron	35367-38-5	
Diglycidyl resorcinol ether		
Dihydrosafrole		
Diisocyanates		
Diisopropyl ether (DIPE)	108-20-3	
Diisopropyl methylphosphonate (DIMP)	1445-75-6	
Dimethipin	55290-64-7	
Dimethoate	60-51-5	
Dimethyl aminoazobenzene	60-11-7	
Dimethyl carbamoyl chloride	79-44-7	
Dimethyl chlorothiophosphate		
Dimethyl phthalate	131-11-3	
Dimethyl sulfate	77-78-1	
Dimethyl terephthalate (DMT)	120-61-6	

Dimethylamine	124-40-3
Dimethylamine dicamba	
Dimethylarsinic acid	
Dimethylcarbamyl chloride	
Dimethyldithiophosphate	756-80-9
Dimethylphosphate	813-79-5
Dimethylthiophosphate	1112-38-5
Di-n-butyl phthalate	
Dinitrobutyl phenol	
Dinitrotoluene (mixed isomers)	25321-14-6
Di-n-octylphthalate	
Dinoseb	88-85-7
Dioxin and dioxin-like compounds	
Diphenamid	957-51-7
Diphenylamine	122-39-4
Dipotassium endothall	
Dipropyl isocinchomeronate	
Diquat	85-00-7
Disodium Cyanodithioimidiocarbonate	
Disulfoton	298-04-4
Diuron	330-54-1
d-Limonene	5989-27-5
Dodine	2439.10.3
d-trans-allethrin	
Endosulfan	115-29-7
Endosulfan sulfate	
Endosulfan, alpha	
Endosulfan, beta	
Endothall	145-73-3
Endrin	72-20-8
Endrin aldehyde	7421-93-4
Endrin ketone	53494-70-5
Enterodiol	80226-00-2
Enterolactone	78473-71-9

Epichlorohydrin	106-89-8	Papillomas and carcinomas of the forestomach
epsilon-Hexachlorocyclohexane (epsilon-HC)	6108.10.7	
Equol	531-95-3	
Ethanol	64-17-5	
Ethephon	16672-87-0	
Ethion	563-12-2	
Ethoprop	13194-48-4	
Ethyl acetate	141-78-6	
Ethyl Acrylate	140-88-5	
Ethyl carbamate	51-79-6	
Ethyl chloride	75-00-3	
Ethyl chloroformate		
Ethyl dipropylthiocarbamate		
Ethyl ether	60-29-7	
Ethyl p-nitrophenyl phenylphosphorothioate (EPN)	2104-64-5	
Ethyl tertiary butyl ether (ETBE)	637-92-3	
Ethylbenzene	100-41-4	
Ethylene		
Ethylene diamine	107-15-3	
Ethylene dichloride		
Ethylene glycol	107-21-1	
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	111-76-2	
Ethylene glycol monobutyl ether acetate		
Ethylene glycol monoethyl ether acetate		
Ethylene glycol monomethyl ether		
Ethylene glycol monomethyl ether acetate		
Ethylene Oxide	75-21-8	
Ethylene thiourea (ETU)	96-45-7	
Ethylenebisdithiocarbamic acid, salts and esters		
Ethyleneimine	151-56-4	

Ethylphthalyl ethylglycolate (EPEG)	84-72-0	
Express	101200-48-0	
Famphur		
Fenamiphos	22224-92-6	
Fenarimol		
Fenbutatin oxide		
Fenoxycarb		
Fenpropathrin		
Ferbam		
Fine mineral fibers		
Fluazifop butyl		
Fluometuron	2164-17-2	
Fluoranthene	206-44-0	
Fluorene	86-73-7	
Fluoride ion	16984-48-8	
Fluorine (soluble fluoride)	7782-41-4	
Fluorouracil		
Fluridone	59756-60-4	
Flurprimidol	56425-91-3	
Flutolanil	66332-96-5	
Fluvalinate	69409-94-5	
Folpet	133-07-3	Digestive tract tumors (adenoma and/ or adenocarcinoma) Liver adenomas and carcinomas
Fomesafen	72178-02-0	
Fonofos	944-22-9	
Formaldehyde	50-00-0	
Formic acid	64-18-6	
Fosetyl-al	39148-24-8	

Freon 113		
Furan	110-00-9	
Furfural	98-01-1	
Furmecyclox	60568-05-0	Combined liver nodules and carcinomas
gamma-Chlordane		
gamma-Chlordene	56641-38-4	
gamma-Hexachlorocyclohexane (gamma-HCH)	58-89-9	
Genistein	446-72-0	
Germanium	7440-56-4	
Glufosinate-ammonium	77182-82-2	
Glutaraldehyde		
Glycidaldehyde	765-34-4	
Glycol ethers		
Glyphosate	1071-83-6	
Guthion		
Haloxyfop-methyl	69806-40-2	
Harmony	79277-27-3	
Heptachlor	76-44-8	Hepatocellular carcinomas
Heptachlor epoxide	1024-57-3	Hepatocellular carcinomas
Heptachlorodibenzofuran	38998-75-3	
Heptachlorodibenzo-p-dioxin	37871-00-4	
Hexabromobenzene	87-82-1	
Hexabromocyclododecane	25637-99-4	
Hexabromodiphenyl ether	36483-60-0	
Hexachloro-1,3-butadiene		

Hexachlorobenzene	118-74-1	Hepatocellular carcinoma Renal tubular adenomas and adenocarcinomas
Hexachlorobutadiene	87-68-3	
Hexachlorocyclohexane, technical		
Hexachlorocyclopentadiene (HCCPD)	77-47-4	
Hexachlorodibenzofuran		Liver tumors (adenomas and carcinomas; neoplastic nodules and hepatocellular carcinomas)
Hexachlorodibenzo-p-dioxin (HxCDD), mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD	NOCAS	
Hexachloroethane	67-72-1	Hepatocellular carcinomas
Hexachlorophene	70-30-4	

Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	Liver, hepatocellular carcinoma, and adenomas (combined)
Hexamethylphosphoramide	680-31-9	
Hexazinone	51235-04-2	
Hydramethylnon		
Hydrazine/Hydrazine sulfate	302-01-2	Hepatoma
Hydrogen chloride	7647-01-0	
Hydrogen cyanide	74-90-8	
Hydrogen Fluoride	7664-39-3	
Hydrogen selenide		
Hydrogen sulfide	7783.06.4	
Hydroquinone	123-31-9	
Imazalil	35554-44-0	

Imazaquin	81335-37-7	
Indeno[1,2,3-cd]pyrene	193-39-5	
Iodine-129	15046-84-1	
Iodine-131	10043-66-0	
Iprodione	36734-19-7	
Iron		
Iron pentacarbonyl		
Isobutyl alcohol	78-83-1	
Isobutyraldehyde		
Isodrin		
Isophorone	78-59-1	Preputial gland carcinoma
Isopropalin	33820-53-0	
Isopropyl alcohol		
Isopropyl methyl phosphonic acid (IMPA)	1832-54-8	
Isopropylbenzene		
Isosafrole		

Isoxaben	82558-50-7
Lactofen	77501-63-4
Lead and compounds (inorganic)	7439-92-1
Linuron	330-55-2
Lithium carbonate	
Londax	83055-99-6
Magnesium	
Malathion	121-75-5
Malathion dicarboxylic acid	1190-28-9
Maleic anhydride	108-31-6
Maleic hydrazide	123-33-1
Malononitrile	
Maneb	12427-38-2
Manganese	7439-96-5
Manganese Compounds	
m-Dinitrobenzene	99-65-0
Mecoprop	

Mepiquat chloride	24307-26-4
Mercuric chloride (HgCl2)	7487-94-7
Mercury Compounds	
Mercury, elemental	7439-97-6
Merphos	150-50-5
Merphos oxide	78-48-8

Metalaxyl	57837-19-1
Methacrylonitrile	126-98-7
Metham sodium	
Methamidophos	10265-92-6
Methane	74-82-8
Methanol	67-56-1
Methazole	
Methidathion	950-37-8
Methiocarb	
Methomyl	16752-77-5
Methoxone	
Methoxone sodium salt	
Methoxychlor	72-43-5
Methyl acetate	
Methyl acrylate	96-33-3
Methyl chloride	74-87-3
Methyl chlorocarbonate	79-22-1
Methyl ethyl ketone (MEK)	78-93-3
Methyl Hydrazine	60-34-4
Methyl iodide	74-88-4
Methyl isobutyl ketone (MIBK)	108-10-1
Methyl isocyanate	624-83-9
Methyl isothiocyanate	
Methyl methacrylate	80-62-6
Methyl parathion	298-00-0

Methyl tert-butyl ether (MTBE)	1634-04-4
Methylcyclohexane	
Methylene bromide	
Methylene Diphenyl Diisocyanate (monomeric MDI) and polymeric MDI (PMDI)	101-68-8
Methylmercury (MeHg)	22967-92-6
Metiram	
Metolachlor	51218-45-2
Metolachlor ethanesulfonic acid (ESA)	171118-09-5
Metolachlor oxanilic acid (OA)	152019-73-3
Metribuzin	21087-64-9
Mevinphos	

Mirex	2385-85-5
Mixture	
Molinate	2212-67-1
Molybdenum	7439-98-7
Molybdenum trioxide	
Mono-(2-ethyl-5-hydroxyhexyl) phthalate	
Mono-(2-ethyl-5-oxohexyl) phthalate	
Mono-2-ethylhexyl phthalate	4376-20-9
Mono-3-carboxypropyl phthalate	
Mono-benzyl phthalate	2528-16-7
Monochloramine	10599-90-3
Monochloropentafluoroethane	
Mono-cyclohexyl phthalate	7517-36-4
Mono-ethyl phthalate	2306-33-4
Mono-isobutyl phthalate	
Mono-isononyl phthalate	
Mono-methyl phthalate	4376-18-5
Mono-n-butyl phthalate	131-70-4
Mono-n-octyl phthalate	5393-19-1
m-Phenylenediamine	108-45-2
m-Xylene	108-38-3
Myclobutanil	
N,N-Diethyl-3-methylbenzamide (DEET)	134-62-3
N,N-Dimethylformamide	68-12-2
Nabam	
Naled	300-76-5
Naphthalene	94-20-3
Napropamide	15299-99-7
n-Butanol	71-36-3
n-Butyl alcohol	
Neptunium-237	13994-20-2
n-Heptane	142-82-5
n-Hexane	110-54-3
Nickel	7440-02-0
Nickel carbonyl	13463-39-3
Nickel Compounds	
Nickel oxide	

Nickel refinery dust	NOCAS
Nickel subsulfide	12035-72-2
Nickel, soluble salts	NOCAS
Nicotine and salts	
Nitrapyrin	1929-82-4
Nitrate	14797-55-8
Nitrate compounds	
Nitric Acid	
Nitric oxide	10102-43-9
Nitrilotriacetic acid	
Nitrite	14797-65-0
Nitrobenzene	98-65-3
Nitrofen	1836-75-5
Nitrogen dioxide	10102-44-0
Nitrogen mustard	
Nitroglycerin	55-63-0
Nitroguanidine	556-88-7
N-Methyl-2-Pyrrolidone	872-50-4
n-Methylolacrylamide	

N-N-Dimethylaniline	121-69-7	
N-Nitrosodiethanolamine	1116-54-7	Hepatocellular carcinoma, cholangiocellular carcinoma and adenoma and neoplastic nodules
N-Nitrosodiethylamine	55-18-5	Liver tumors
N-Nitrosodimethylamine	62-75-9	Liver tumors
N-Nitroso-di-n-butylamine	924-16-3	Bladder and esophagus tumors
N-Nitrosodi-N-propylamine	621-64-7	Hepatocellular carcinomas
N-Nitrosodiphenylamine	86-30-6	Transitional cell carcinoma of the bladder
n-Nitrosomethylvinylamine		
N-Nitrosomorpholine	59-89-2	
n-Nitroso-n-ethylurea		

N-Nitroso-N-methylethylamine	10595-95-6	Hepatocellular carcinomas
N-Nitroso-n-methylurea	684-93-5	
n-Nitrosopiperidine		
N-Nitrosopyrrolidine	930-55-2	Hepatocellular carcinoma and adenoma
Nonabromodiphenyl ether	63936-56-1	
Norflurazon	27314-13-2	
n-Propylbenzene	103-65-1	
NuStar	85509-19-9	
o,p'-DDD	53-19-0	
o,p'-DDT	789-02-6	
o-Chlorotoluene	95-49-8	
Octabromodiphenyl ether	32536-52-0	
Octachloronaphthalene		
Octachlorostyrene		
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2961-41-0	
o-Desmethylangolensin	21255-69-6	
o-Dinitrobenzene	528-29-0	
ortho-Anisidine	90-04-0	
ortho-Phenylphenol	90-43-7	

Oryzalin	19044-88-3	
o-Toluidine	95-53-4	
o-Toluidine hydrochloride		
Oxadiazon	19666-30-9	
Oxamyl	23135-22-0	
Oxychlordane	27304-13-8	
Oxydemeton Methyl	301-12-2	
Oxyfluorfen	42874-03-3	
o-Xylene	95-47-6	
Ozone		
p,p'-Dibromodiphenyl ether	2050-47-7	
p,p'-Dichlorodiphenyl dichloroethane (DDD)	72-54-8	Liver tumors

p,p'-Dichlorodiphenyldichloroethylene (DDE)	72-55-9	Hepatocellular carcinomas, hepatomas
p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	Liver tumors, benign and malignant
Paclobutrazol	76738-62-0	
Palladium		
Paraldehyde		
Paraquat	1910-42-5	
Paraquat dichloride		
Parathion	56-38-2	
p-Bromodiphenyl ether	101-55-3	
p-Chloroaniline	106-47-8	
p-Chlorophenyl isocyanate		
p-Chlorophenyl methyl sulfide	123-09-01	

p-Chlorophenyl methyl sulfone	98-57-7	
p-Chlorophenyl methyl sulfoxide	934-73-6	
p-Cresidine		
p-Dinitrobenzene		
Pendimethalin	40487-42-1	
Pentabromodiphenyl ether	32534-81-9	
Pentachlorobenzene	608-93-5	
Pentachlorobenzofuran		
Pentachlorocyclopentadiene	25329-35-5	
Pentachlorodibenzo-p-dioxin	36088-22-9	
Pentachloroethane		
Pentachloronitrobenzene (PCNB)	82-68-8	
Pentachlorophenol	87-86-5	Hepatocellular adenoma/carcinoma, pheochromocytoma/malignant pheochromocytoma, hemangiosarcoma/hemangioma (pooled incidence)
Pentaerythritol tetranitrate		
Pentafluoroethane	354-33-6	
Pentobarbital sodium		
Peracetic acid		
Perchlorate (ClO4) and Perchlorate Salts	14797-73-0	
Perchloroethylene		
Perfluorooctanoic acid (PFOA)	335-67-1	

Perfluorooctanyl sulfonate (PFOS)	
Permethrin	52645-53-1
Phenanthrene	85-01-8
Phenmedipham	13684-63-4
Phenol	108-95-2
Phenothrin	
Phenylmercuric acetate	62-38-4
Phenytoin	
Phorate	298-02-2
Phosalone	2310-17-0
Phosgene	75-44-5
Phosmet	732-11-6
Phosphine	7803-51-2
Phosphoric acid	7664-38-2
Phosphorus	7723-14-0
Phthalic anhydride	85-44-9
Picloram	1918.02.1
Picric acid	
Piperonyl butoxide	
Pirimiphos-methyl	29232-93-7
Platinum	7440.06.4
Plutonium	
Plutonium-238	12981-16-3
Plutonium-239	15117-48-3
Plutonium-240	14119-33-6
p-Nitroaniline	
p-Nitrophenol	100-02-7
p-Nitrosodiphenylamine	
Polonium-210	13981-52-7
Polybrominated biphenyls	
Polychlorinated alkanes	

Polychlorinated biphenyls (PCBs)	1336-36-3	Liver hepatocellular adenomas, carcinomas, cholangiomas, or cholangiocarcinomas
Polycyclic Aromatic Compounds	130498-29-2	
Potassium		
Potassium bromate		
Potassium cyanide	151-50-8	
Potassium dimethyldithiocarbamate		
Potassium n-methyldithiocarbamate		
Potassium silver cyanide	506-61-6	
Potassium-40		
p-Phenylenediamine	106-50-3	

Prochloraz	67747-09-5	Liver adenoma/ carcinoma combined
Profenofos	41198-08-7	
Prometon	1610-18-0	
Prometryn	7287-19-6	
Pronamide	23950-58-5	
Propachlor	1918-16-7	
Propane sultone		
Propanil	709-98-8	
Propargite	2312-35-8	
Propargyl alcohol	107-19-7	
Propazine	139-40-2	
Propham	122-42-9	
Propiconazole	60207-90-1	
Propionaldehyde	123-38-6	
Propylene		
Propylene glycol	57-55-6	
Propylene glycol monoethyl ether	52125-53-8	
Propylene glycol monomethyl ether (PGME)	107-98-2	
Propylene oxide	75-56-9	Forestomach, squamous cell carcinoma
Propyleneimine	75-55-8	
Pursuit	81335-77-5	
p-Xylene	106-42-3	
Pydrin	51630-58-1	

Pyrene	129-00-0	
Pyrethrum	8003-34-7	
Pyridine	110-86-1	
Quinalphos	13593-03-8	
Quinoline	91-22-5	Hepatic hemangioendotheliomas or hemangiosarcomas
Quinone	106-51-4	
Quintozene		
Quizalofop-ethyl		
Radionuclides		
Radium 226,228	7440-14-4	
Radon	10043-92-2	
Radon 222	14859-67-7	
Radon-220	22481-48-7	
Refractory ceramic fibers	NOCAS	
Resmethrin	10453-86-8	
Rotenone	83-79-4	
S,S,S-Tributyl trithiophosphate		
Saccharin (manufacturing, no supplier notification)		
Safrole		
Savey	78587-05-0	
Sec-butyl alcohol		
sec-Butylbenzene	135-98-8	
Selenious acid	7783-00-8	
Selenium and Compounds	7782-49-2	
Selenium sulfide	7446-34-6	
Selenourea	630-10-4	
Sethoxydim	74051-80-2	
S-Ethyl dipropylthiocarbamate (EPTC)	759-94-4	
Silica (crystalline, respirable)		
Silver	7440-22-4	
Silver compounds		

Silver cyanide	506-64-9	
Simazine	122-34-9	
Sodium		
Sodium arsenate	7784-46-5	
Sodium azide	26628-22-8	
Sodium cyanide	143-33-9	
Sodium dicamba		
Sodium diethyldithiocarbamate	148-18-5	
Sodium fluoroacetate	62-74-8	
Sodium hydroxide		
Sodium nitrite		
Sodium o-phenylphenoxide		
Strobane		
Strontium	7440-24-6	
Strychnine	57-24-9	
Styrene	100-42-5	
Styrene Oxide	96-09-3	
Sulfates		
Sulfur dioxide		
Sulfuric Acid (1994 and after 'acid aerosols' only)		
Sulfuryl fluoride		
Systhane	88671-89-0	
t-Butylchloride	507-20-0	
Tebuconazole	107534-96-3	
Tebufenozide	112410-23-8	
Tebuthiuron	34014-18-1	
technical Hexachlorocyclohexane (t-HCH)	608-73-1	Liver nodules and hepatocellular carcinomas
Tellurium	13494-80-9	
Temephos		

Terbacil	5902-51-2
Terbufos	13071-79-9
Terbufos sulfone	56070-16-7
Terbutryn	886-50-0
tert-Amyl ethyl ether (TAEE)	919-94-8
tert-Amyl methyl ether (TAME)	994-05-8
Tert-butyl alcohol	
Tetrabromobisphenol A	
Tetrabromodiphenyl ether	40088-47-9
Tetrachlorobiphenyl	26914-33-0
Tetrachlorocyclopentadiene	695-77-2
Tetrachlorodibenzo-p-dioxin	41903-57-5
Tetrachloroethane	25322-20-7
Tetrachloroethene	
Tetrachloroethylene	127-18-4
Tetrachlorovinphos	961-11-5
Tetracycline hydrochloride	
Tetraethyl lead	78-00-2
Tetraethyldithiopyrophosphate	3689-24-5
Tetrahydrofuran	109-99-9
Tetramethrin	
Thallic oxide	1314-32-5
Thallium	7440-28-0
Thallium acetate	563-68-8

Thallium carbonate	6533-73-9
Thallium chloride	7791-12-0
Thallium compounds	
Thallium nitrate	10102-45-1
Thallium selenite	12039-52-0
Thallium(I) sulfate	7446-18-6
Thiabendazole	
Thioacetamide	
Thiobencarb	28249-77-6
Thiocyanate	302-04-5
Thiodicarb	59669-26-0
Thiophanate-methyl	23564-05-8
Thiosemicarbazide	
Thiourea	
Thiram	137-26-8
Thorium	
Thorium dioxide	
Thorium-227	15623-47-9
Thorium-228	14274-82-9
Thorium-230	14269-63-7
Titanium Tetrachloride	7550-45-0
Toluene	108-88-3
Toluene-2,4-diisocyanate	
Toluene-2,6-diisocyanate	

Toxaphene Trade Secret chemical	8001-35-2	Hepatocellular carcinomas and neoplastic nodules
Tralomethrin	6684-25-6	
trans-1,2-Dichloroethylene	156-60-5	
Trans-1,3-Dichloropropene	10061-02-6	
trans-1,4-dichloro-2-butene		
trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	55701-03-6	

Trans-chlordane	5103-74-2
trans-Nonachlor	
Triadimefon	
Triallate	2303-17-5
Triasulfuron	82097-50-5
Tribenuron methyl	
Tribromochloromethane	594-15-0
Tribromodiphenyl ether	49690-94-0
Tributylin methacrylate	
Tributyltin	688-73-3
Tributyltin oxide (TBTO)	56-35-9
Trichlorfon	
Trichloroacetic acid	76-03-9
Trichloroacetyl chloride	
Trichlorobenzene	12002-48-1
Trichlorocyclopentadiene	77323-84-3
Trichloroethane	25323-89-1
Trichloroethylene	79-01-6
Trichlorofluoroethane	27154-33-2
Trichlorofluoromethane	75-69-4
Triclopyr triethylammonium salt	
Tricresol	1319-77-3
Tridiphane	58138-08-2
Triethylamine	121-44-8
Triethylene glycol monobutyl ether	143-55-6

Triethylene glycol monoethyl ether	112-50-5	
Trifluralin	1582-09-8	Combined renal pelvis carcinomas, urinary bladder papillomas and/or thyroid adenomas and carcinomas
Triforine		
Triphenyltin Hydroxide	76-87-9	
Tris(2,3-dibromopropyl) phosphate		
Trypan blue		
Tungsten	7440-33-7	
Uranium, natural	7440-61-1	
Uranium, soluble salts	NOCAS	
Urea	57-13-6	
Vanadium (except when contained in an alloy)	7440-62-2	
Vanadium compounds		
Vanadium pentoxide	1314-62-1	
Vernam	1929-77-7	
Vinclozolin	50471-44-8	
Vinyl acetate	108-05-4	
Vinyl bromide	593-60-2	

Vinyl chloride	75-01-4	Total of liver angiosarcoma, hepatocellular carcinoma, and neoplastic nodules
Warfarin	81-81-2	
Xylenes	1330-20-7	
Zinc (fume or dust)		
Zinc and Compounds	7440-66-6	

Zinc cyanide	557-21-1
Zinc phosphide	1314-84-7
Zineb	12122-67
Ziram	137-30-4

Oral Slope Factors

2.6×10^{-2} per mg/kg-day

2.0×10^{-1} per mg/kg-day

5.7×10^{-2} per mg/kg-day

2 per mg/kg-day

$9.1x10^{-2}$ per mg/kg-day

$8.0x10^{-1}$ per mg/kg-day

$1x10^{-1}$ per mg/kg-day; 5 x 10-2 per mg/kg-day; 5 x 10-2 per mg/kg-day

$1.1x10^{-2}$ per mg/kg-day

$1.1x10^{-2}$ per mg/kg-day

$3.0x10^{-2}$ per mg/kg-day

$4.5x10^{-1}$ per mg/kg-day

$4.6x10^{-2}$ per mg/kg-day

8.7×10^{-3} per mg/kg-day

0.5 per mg/kg-day

$5.4x10^{-1}$ per mg/kg-day

$1.7x10^{1}$ per mg/kg-day

6.3 per mg/kg-day

$5.7x10^{-3}$ per mg/kg-day

$2.5x10^{-2}$ per mg/kg-day

1.5 per mg/kg-day

$1.1x10^{-1}$ per mg/kg-day

1.5 x 10-2 per mg/kg-day; 5.5 x 10-2 per mg/kg-day

$2.3x10^{2}$ per mg/kg-day

7.3 per mg/kg-day

$1.3x10^{1}$ per mg/kg-day

$1.7x10^{-1}$ per mg/kg-day

1.8 per mg/kg-day

1.1 per mg/kg-day

$2.2x10^{2}$ per mg/kg-day

$7x10^{-1}$ per mg/kg-day

$6.2x10^{-2}$ per mg/kg-day

$7.9x10^{-3}$ per mg/kg-day

7 x 10-2 per mg/kg-day

3.5x10-1 per mg/kg-day
10 per mg/kg-day

7x10-4 per mg/kg-day

$1.4x10^{-2}$ per mg/kg-day

$1.2x10^{-3}$ per mg/kg-day

$8.4x10^{-2}$ per mg/kg-day

$5x10^{-2}$ per mg/kg-day

$7.5x10^{-3}$ per mg/kg-day

$2.9x10^{-1}$ per mg/kg-day

$1.6x10^{1}$ per mg/kg-day

$9.9x10^{-3}$ per mg/kg-day

$3.5x10^{-3}$ per mg/kg-day

$1.9x10^{-1}$ per mg/kg-day

$3.0x10^{-2}$ per mg/kg-day

4.5 per mg/kg-day

9.1 per mg/kg-day

1.6 per mg/kg-day

$7.8x10^{-2}$ per mg/kg-day

$6.2x10^{3}$ per mg/kg-day

$1.4x10^{-2}$ per mg/kg-day

$1.1x10^{-1}$ per mg/kg-day

3.0 per mg/kg-day

$9.5x10^{-4}$ per mg/kg-day

2.8 per mg/kg-day

$1.5x10^{2}$ per mg/kg-day

$5.1x10^{1}$ per mg/kg-day

5.4 per mg/kg-day

7.0 per mg/kg-day

$4.9x10^{-3}$ per mg/kg-day

$2.2x10^{1}$ per mg/kg-day

2.1 per mg/kg-day

$2.4x10^{-1}$ per mg/kg-day

$3.4x10^{-1}$ per mg/kg-day

$3.4x10^{-1}$ per mg/kg-day

$1.2x10^{-1}$ per mg/kg-day

2.0 per mg/kg-day; 1.0 per mg/kg-day; 4x10-1 per mg/kg-day; 3x10-1 per mg/kg-day; 7x10-2 per mg/kg-day; 7x10-2 per mg/kg-day

$1.5x10^{-1}$ per mg/kg-day

$2.4x10^{-1}$ per mg/kg-day

3 per mg/kg-day

1.8 per mg/kg-day

1.1 per mg/kg-day

7.7×10^{-3} per mg/kg-day

7.2 x 10-1 per mg/kg-day; 7.5 x 10-1 per mg/kg-day; 1.4 per mg/kg-day; 1.5 per mg/kg-day

Oral Slope Factor/Drinking Water Risks

Extrapolation Method
Linearized multistage procedure, extra risk
Linearized multistage procedure, extra risk
Linearized multistage procedure, extra risk

Multistage model with Poly-3 adjusted incidence data; linear extrapolation from lower 95% confidence limit on dose associated with extra risk (adjusted for background) at point of departure at lower end of data range.

Linearized multistage procedure with time-to-death analysis, extra risk

Linearized multistage procedure, extra risk

Linearized multistage model, extra risk; Linearized multistage model, extra risk; Linearized multistage model, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Multistage model with linear extrapolation from the point of departure (BMDL), summed risk.

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Time- and dose-related formulation of the multistage model

Linearized multistage procedure, extra risk

Linear extrapolation of human occupational data; Linear extrapolation of human occupational data

One-hit with time factor, extra risk

Risk estimate based on a geometric mean of four slope factors obtained by different modeling procedures

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Time-to-tumor, Weibull

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Multistage model with linear extrapolation from the POD (LED10)

Linearized multistage procedure, extra risk
Multistage-Weibull model (implemented in TOX_RISK) with linear extrapolation from the POD (BMDL10)

Multistage model with linear extrapolation from the point of departure (LED12)

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Multistage model with Benchmark Dose Modeling

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Weibull, extra risk

Weibull, extra risk

Linearized multistage procedure, extra risk

One-hit

Linearized multistage procedure, extra risk

One-hit

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure

Linear extrapolation below LED10s; Linear extrapolation below LED10s; Linear extrapolation below LED10s; Linear extrapolation below LED10s; Linear extrapola

Male mice: time-to-tumor linearized multistage procedure in dose, Weibull in time. Female mice: linearized multistage procedure

Linearized multistage procedure, extra risk

Time-to-tumor, multistage-Weibull

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

LMS method; LED 10/linear method; LMS method; LED 10/linear method

Drinking Water Unit Risks	Study Route	Critical Effects
$7.4x10^{-7}$ per ug/L	Oral, gavage	Leydig cell Performan
$5.8x10^{-6}$ per ug/L	Oral, gavage	
$1.6x10^{-6}$ per ug/L	Oral, gavage	

Liver toxici
No adverse

		Testicular
$6x10^{-5}$ per ug/L	Oral, gavage	Nasal infla

$2.6x10^{-6}$ per ug/L	Oral, gavage	Hyperplasi
$2.2x10^{-5}$ per ug/L	Oral, diet	Degenerati
		Ovarian at

$3x10^{-6}$ per ug/L; 2 x 10-6 per ug/L; 1 x 10-6 per ug/L	Oral, gavage (NTP, 1985); dietary (Stott et al., 1995)	Hypertroph
		Increased l
$3.1x10^{-7}$ per ug/L	Oral, drinking water	
		Degenerati
		No adverse

$3.1x10^{-7}$ per ug/L	Oral, diet	
$9.0x10^{-7}$ per ug/L	Oral, diet	
		Chronic lur

Squamous

Decreased
Motor conc

Testicular

Liver focal

$1.3x10^{-5}$ per ug/L

Oral, diet

$1.3x10^{-6}$ per ug/L	Oral, diet

$2.5x10^{-7}$ per ug/L	Oral, diet	Degenerati
		Mortality
		Nasal lesio
$1.3x10^{-4}$ per ug/L	Oral, drinking water	Degenerat ive nerve changes Degenerati

$1.5x10^{-5}$ per ug/L	Oral, drinking water	Degenerati
$4.9x10^{-4}$ per ug/L	Oral, drinking water	
		Functional

$1.8x10^{-4}$ per ug/L	Oral, diet

Lack of evidence of decreased pulmonary function or changes in subjective symptomatology (other effect: Increased severity of rhinitis and pneumonia with respiratory lesions)

$1.6x10^{-7}$ per ug/L	Oral, diet	Lack of tox
		Pulmonary
$7.1x10^{-7}$ per ug/L	Oral, diet	

$5x10^{-5}$ per ug/L	Oral, drinking water	Increased hemolysis, abnormal RBC morphology, and increased spleen weight (other effect: Increased hemolysis, increased spleen weight, and impaired compensatory erythropoiesis)

$3.1x10^{-6}$ per ug/L	Oral, diet
4.4 x 10-7 per ug/L; 1.6 x 10-6 per ug/L	Inhalation; Occupational exposure Decreased
$6.7x10^{-3}$ per ug/L	Inhalation, occupational exposure

$2.1x10^{-4}$ per ug/L	Oral, diet
$3.6x10^{-4}$ per ug/L	Oral, gavage in sesame oil
$4.9x10^{-6}$ per ug/L	Oral, gavage in corn oil

Beryllium s

$5.3x10^{-5}$ per ug/L	Oral, diet
$3.3x10^{-5}$ per ug/L	Oral, gavage followed by diet
$6.2x10^{-3}$ per ug/L	Inhalation

$2x10^{-5}$ per ug/L

Oral, drinking water

Hepatocellular cytomegaly in female B6C3F1 mice

$1.8x10^{-6}$ per ug/L	Oral, gavage in corn oil	
$2.3x10^{-7}$ per ug/L	Oral, gavage in corn oil	Degenerati

		Peripheral
2 x 10-6 per ug/L	Inhalation, route-to-route extrapolation, PBPK modeling	Fatty changes in the liver

		Increased incidence of alveolar epithelial hyperplasia in the lungs of male and female rats
1x10-5 per ug/L 3x10-4 per µg/L	Oral, diet Oral, dietary	Hepatic eff

Vascular congestion and peribronchial edema (other effect: Hemorrhagic alveoli and congested capillaries in the lungs)

Increased l

Nasal septu

Increased l

Reduced p

2x10-8 per µg/L	Oral, diet
$4x10^{-7}$ per ug/L	Oral, diet
$3.4x10^{-8}$ per ug/L	Oral, diet

$2.4x10^{-6}$ per ug/L	Oral, diet
$1.4x10^{-6}$ per ug/L	Oral, drinking water
$2.1x10^{-7}$ per ug/L	Inhalation (NTP); oral, drinking water (NCA)

$8.3x10^{-6}$ per ug/L	Oral, gavage	Decreased
$4.6x10^{-4}$ per ug/L	Oral, diet	
		Pulmonary

$2.8x10^{-7}$ per ug/L	Oral, drinking water	Changes ir
		Delayed fe
		Developme
		Hemosider

$1.0x10^{-7}$ per ug/L	Oral, diet
$5.4x10^{-6}$ per ug/L	Oral, diet

$8.6x10^{-7}$ per ug/L	Oral, diet
$1.3x10^{-4}$ per ug/L	Oral, diet
$2.6x10^{-4}$ per ug/L	Oral, diet

$4.6x10^{-5}$ per ug/L	Oral, diet	
$2.2x10^{-6}$ per ug/L	Oral, diet	
		Suppurativ
$1.8x10^{-1}$ per ug/L	Oral, gavage	
$4.0x10^{-7}$ per ug/L	Oral, gavage	

$3.1x10^{-6}$ per ug/L	Oral, diet	
$8.5x10^{-5}$ per ug/L	Oral, gavage (hydrazine sulfate in water)	Hyperplasi CNS sypto
		Nasal lesio

$2.7x10^{-8}$ per ug/L	Oral, gavage

Impairmen

Hand tremor; increases in memory disturbances; slight subjective and objective evidence of autonomic dysfunction

Cerebellar

Developme

Degenerati

Increased absolute and relative liver and kidney weights and increased severity of spontaneous renal lesions (females), increased prostration (females), and swollen periocular tissue (males and females)

Hyperplasi

Digestive c

Nasal effec

Peripheral

Bronchioliz

$8.0x10^{-5}$ per ug/L	Oral, drinking water
$4.3x10^{-3}$ per ug/L	Oral, drinking water
$1.4x10^{-3}$ per ug/L	Oral, drinking water
$1.6x10^{-4}$ per ug/L	Oral, drinking water
$2.0x10^{-4}$ per ug/L	Oral, drinking water
$1.4x10^{-7}$ per ug/L	Oral, drinking water

$6.3x10^{-4}$ per ug/L	Oral, drinking water
$6.1x10^{-5}$ per ug/L	Oral, diet

$6.9x10^{-6}$ per ug/L	Oral, diet

$9.7x10^{-6}$ per ug/L	Oral, diet
$9.7x10^{-6}$ per ug/L	Oral, diet

$3x10^{-6}$ per ug/L	Oral, diet

Collagen st

Decreased
Bronchiola

NA; NA; 1 x 10-5 per ug/L; NA; NA; NA

Oral, diet

$4.3x10^{-6}$ per ug/L	Oral, diet	
		Atrophy of
		Mild revers
$6.8x10^{-6}$ per ug/L	Oral, gavage in salad oil	Nest-like ir

$9x10^{-5}$ per ug/L	Oral, diet

CNS effect

$5.1x10^{-5}$ per ug/L

Oral, diet

Neurologic

$3.2x10^{-5}$ per ug/L	Oral, diet

No observe

$2.2x10^{-7}$ per ug/L

Oral, diet

Nasal epith
Hypertroph

2.1 x 10-5 per ug/L; 2.1 x 10-5 per ug/L; 4.2 x 10-5 per ug/L; 4.2 x 10-5 per ug/L	Oral, diet	Liver cell p Impaired m

Inhalation RfC

8 x 101 mg/m3
9 mg/m3 (acute, 1 hour); 5 mg/m3 (short-term); 5 mg/m3 (subchronic); 5 mg/m3 (chronic)

2 x 10-1 mg/m3
4 x 101 mg/m3

2 x 10-4 mg/m3

9 x 10-3 mg/m3

4 x 10-3 mg/m3

2 x 10-2 mg/m3

2 x 10-3 mg/m3

2 x 10-2 mg/m3

8 x 10-1 mg/m3

1 x 10-5 mg/m3

5 x 101 mg/m3

7 x 10-5 mg/m3

3 x 10-5 mg/m3

2 x 10-1 mg/m3
3x10-2 mg/m3

2 x 10-2 mg/m3

2 x 10-2 mg/m3

9 x 10-3 mg/m3

6 x 10-2 mg/m3

2 x 10-5 mg/m3

0.006 mg/m3
1 x 10-3 mg/m3

2 x 10-3 mg/m3

1 x 10-3 mg/m3

1 x 10-1 mg/m3

1 x 10-3 mg/m3

2 x 10-4 mg/m3

5 x 10-5 mg/m3

3 x 10-2 mg/m3

2 x 10-5 mg/m3

6 x 10-2 mg/m3

5 x 10-3 mg/m3

7 x 10-1 mg/m3

0.1 mg/m3

9x10-4 mg/m3

7 x 10-4 mg/m3

2 x 10-4 mg/m3

5 x 101 mg/m3

8 x 10-6 mg/m3 (chromic acid mists and dissolved Cr(VI) aerosols); 1 x 10-4 mg/m3 (Cr(VI) particulates)

4 x 10-1 mg/m3

6 mg/m3

5 x 10-4 mg/m3

5 x 10-3 mg/m3

1 x 10-3 mg/m3

1 x 10-1 mg/m3

1 mg/m3

1.6 mg/m3

2 x 10-4 mg/m3

2 x 10-2 mg/m3
3 x 10-3 mg/m3

2 x 10-3 mg/m3

5 x 10-5 mg/m3

3 x 10-4 mg/m3

9 x 10-2 mg/m3

5 mg/m3

7 x 10-1 mg/m3

3 mg/m3

6 x 10-4 mg/m3

3 x 10-2 mg/m3

3 x 10-3 mg/m3

7 x 10-1 mg/m3

9x10-3 mg/m3

3 x 10-4 mg/m3

3 x 10-3 mg/m3
1 x 10-2 mg/m3

8x10-3 mg/m3

2 mg/m3

3 x 10-2 mg/m3

1 mg/m3

5 mg/m3

7 x 10-3 mg/m3

2 x 10-1 mg/m3
3 x 10-3 mg/m3

1 x 10-1 mg/m3

0.1 mg/m3

RfC Values

POD	Overall Confidence
BMC10 (HEC): 8200 mg/m3 LOAEL: 950 mg/m3; LOAEL: 526 mg/m3; LOAEL (HEC): 1553 mg/m3; NOEL (HEC): 1553 mg/m3	Medium Medium; Medium; Medium; Medium

BMCL10 (HEC): 6.9 mg/m3	Medium
NOAEL (HEC): 12051 mg/m3	Medium

NOAEL (HEC): 0.17 mg/m3	Medium
BMCL10 (HEC): 2.8 mg/m3)	Medium

LOAEL (HEC): 1.3 mg/m3	Medium
LOAEL (HEC): 4.8 mg/m3	Medium
BMCL10 (HEC): 1.98 mg/m3	Medium

BMCL10 (HEC)L 0.72 mg/m3	High
NOAEL (HEC): 75 mg/m3	Medium
NOAEL (HEC): 0.001 mg/m3	Medium
NOAEL (HEC): 14710 mg/m3	Medium

NOAEL (HEC): 0.002 mg/m3

Medium

LOAEL (HEC): 0.03 mg/m3	Low
NOAEL (HEC): 68 mg/m3	Medium
BMCL05 (HEC): 90 mg/m3	Low/Medium
NOAEL (HEC): 17 mg/m3	Medium

LOAEL (HEC): 16 mg/m3	Low

NOAEL (HEC): 8.7 mg/m3	Low
NOAEL (HEC): 60 mg/m3	Medium
LOAEL (HEC): 0.02 mg/m3	Medium
HEC (BMDL): 0.18 mg/m3	Medium
LOAEL (HEC): 0.33 mg/m3	Medium

LOAEL (HEC): 1.9 mg/m3

Medium

NOAEL (HEC): 3.6 mg/m3

Low

NOAEL (HEC): 2.3 mg/m3

Medium

NOAEL (HEC): 3.4 mg/m3	Low
BMC10 (HEC): 0.074 mg/m3	Medium

NOAEL (HEC): 0.014 mg/m3

Medium

BMCL: 8.2 mg/m3

Medium

LOAEL (HEC): 0.0002 mg/m3

Medium

BMCL10 (HEC): 63 mg/m3

Medium

LOAEL (HEC): 0.48 mg/m3	High

BMC10 (HEC): 19.7 mg/m3

BMCL10 (HEC): 14.3 mg/m3

Medium

BMCL (HEC): 0.86 mg/m3	Low/Medium
NOAEL (HEC): 0.65 mg/m3	Low

LOAEL (HEC): 0.64 mg/m3	Low
NOAEL (HEC): 5260 mg/m3	Medium

LOAEL (ADJ): 0.000714 mg/m3; BMC10 (ADJ): 0.034 mg/m3	Low; Medium
NOAEL (HEC): 435 mg/m3	Medium
BMCL1sd (HEC): 1822 mg/m3	Low/Medium

NOAEL (HEC): 0.05 mg/m3	Medium
NOAEL (HEC): 0.144 mg/m3	Medium

NOAEL (HEC): 0.36 mg/m3)	Medium
NOAEL (HEC): 4000 mg/m3	Medium
NOAEL (HEC): 434 mg/m3	Low
BMCL (HEC): 16mg/m3	Medium/High

NOAEL (HEC): 0.024 mg/m3

Medium

LOAEL (HEC): 6.1 mg/m3	Low
LOAEL (HEC): 2.5 mg/m3	Low
NOAEL (HEC): 0.64 mg/m3	Medium/High

LOAEL (HEC): 0.05 mg/m3

Medium

LOAEL (ADJ): 0.009 mg/m3

Medium

NOAEL (HEC): 94.6 mg/m3	Medium
LEC (HEC): 1517 mg/m3	Medium
BMC10 (HEC): 7.2 mg/m3	Medium/High

NOAEL (HEC): 250 mg/m3	Medium
BMC10 (HEC): 0.06 mg/m3	Medium

LOAEL (HEC): 7.9 mg/m3	Medium
LOAEL (HEC): 9.3 mg/m3	Medium
BMCL (HEC): 215 mg/m3	Medium

BMCL10 (HEC): 0.26 mg/m3

Medium/High

BMDL10 (HEC): 0.03 mg/m3	Medium
NOAEL (HEC): 0.25 mg/m3	Low
BMC10 (HEC): 3.4 mg/m3	Medium

BMCL10 (HEC): 8mg/m3	Low/Medium
NOAEL (HEC): 658 mg/m2	Medium
LOAEL (HEC): 2.9 mg/m3	Medium

NOAEL (HEC): 34 mg/m3

Medium

NOAEL (ADJ): 46 mg/m3

High

NOAEL (HEC): 19.5 mg/m3

Low

NOAEL (HEC): 5 mg/m3
LOAEL (HEC): 7.7 mg/m3

High
Low

NOAEL (HEC): 2.5 mg/m3	Medium
NOAEL (HEC): 39 mg/m3	Medium

WOE 86 Guidelines

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

Inadequate information to assess carcinogenic potential

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).
D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

Likely to be carcinogenic to humans

B1, Probable human carcinogen - based on limited evidence of carcinogenicity in humans

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

A, Human Carcinogen
D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

E, Evidence of non-carcinogenicity for humans
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

A, Human Carcinogen

A, Human Carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
B1, Probable human carcinogen - based on limited evidence of carcinogenicity in humans

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

A, Human Carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

Inadequate information to assess carcinogenic potential

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity
B1, Probable human carcinogen - based on limited evidence of carcinogenicity in humans

Likely to be carcinogenic to humans

Inadequate information to assess carcinogenic potential

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
Likely to be carcinogenic to humans (Oral route)

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
A, Human Carcinogen

D, Not classifiable as to human carcinogenicity
A, Human Carcinogen (Inhalation route); D, Not classifiable as to human carcinogenicity (Oral route)
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

A, Human Carcinogen
D, Not classifiable as to human carcinogenicity

B1, Probable human carcinogen - based on limited evidence of carcinogenicity in humans
C, Possible human carcinogen
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

Suggestive evidence of carcinogenic potential

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity
C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

Not likely to be carcinogenic to humans

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

B1, Probable human carcinogen - based on limited evidence of carcinogenicity in humans

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

Inadequate information to assess carcinogenic potential

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

E, Evidence of non-carcinogenicity for humans

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

E, Evidence of non-carcinogenicity for humans

D, Not classifiable as to human carcinogenicity
C, Possible human carcinogen

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

A, Human Carcinogen
A, Human Carcinogen

Likely to be carcinogenic to humans (Combined route)

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

C, Possible human carcinogen
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

Inadequate information to assess carcinogenic potential
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

C, Possible human carcinogen

Inadequate information to assess carcinogenic potential

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity
B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

Inadequate information to assess carcinogenic potential

Inadequate information to assess carcinogenic potential

Inadequate information to assess carcinogenic potential
Inadequate information to assess carcinogenic potential

Inadequate information to assess carcinogenic potential
Inadequate information to assess carcinogenic potential
Inadequate information to assess carcinogenic potential

D, Not classifiable as to human carcinogenicity

B2, Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals

D, Not classifiable as to human carcinogenicity
D, Not classifiable as to human carcinogenicity

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

D, Not classifiable as to human carcinogenicity

C, Possible human carcinogen

NA, Not applicable. This substance was not assessed using the 1986 cancer guidelines (U.S. EPA, 1986).

D, Not classifiable as to human carcinogenicity

Weight-of-Evidence

WOE Narrative
Increased incidence of combined hepatocellular adenomas and carcinomas in female mice; inadequate evidence from human studies. There are no reported human data and animal studies (one lifetime gavage, one intermediate-term inhalation) have not demonstrated carcinogenicity. Technical g
Increased incidence of hepatocellular carcinomas in mice
Hepatocellular carcinomas and pheochromocytomas in one strain of mice forms the basis for this classification. Carcinogenicity was not shown in rats. 1,1,2-Trich
No human data and inadequate studies in mice and rats. Results of genotoxicity tests are generally negative.

Based on no human data and limited evidence of carcinogenicity in two animal species (rats and mice) as shown by an increased incidence of mammary gland ac

Under the draft revised guidelines for carcinogen risk assessment (U.S. EPA, 1999), EPA concludes 1,1-DCE exhibits suggestive evidence of carcinogenicity but

A dermal exposure study in mice was found inadequate for drawing conclusions as to carcinogenicity in humans.

Increased incidences of a variety of tumors in rats and mice in both sexes by three routes of administration at both the site of application and at distant sites. EDB

Based on no human data and evidence of both negative and positive trends for carcinogenic responses in rats and mice.

Based on the induction of several tumor types in rats and mice treated by gavage and lung papillomas in mice after topical application

Positive results of studies in both rats and mice form the basis for this classification. Two apparently negative studies lack information on compound purity, experi

Under EPA's 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), 1,3-butadiene is characterized as carcinogenic to humans by inhalation. This ch

Based on no human data, no animal data and limited genetic data.

Although the available human data are inadequate, 1,3-dichloropropene is characterized as "likely" to be a human carcinogen in accordance with the Proposed G

Induction of nasal cavity and liver carcinomas in multiple strains of rats, liver carcinomas in mice, and gall bladder carcinomas in guinea pigs.
Based on no data in humans and animals.

Based on no human carcinogenicity data and inadequate animal data.

Human data are not available and the available animal cancer bioassay studies are considered to be inadequate.

Based on no human data and sufficient evidence in animals; namely, increased incidence of lymphomas or leukemias in male rats and hepatocellular adenomas

Evidence of human carcinogenicity is inadequate. Urinary bladder papilloma and carcinoma were observed in female Fischer 344 rats. Mutagenic activity was obs
Based on multiple benign and malignant tumor types at multiple sites in both sexes of rats (2 strains) and malignant renal tumors in male mice. The classification

Based on no human carcinogenicity data and inadequate animal data.

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for 2-hexanone is "inadequate to assess human carcinogenic potential."

Based on an increased incidence of skin papillomas in mice in an initiation-promotion study. The three cresol isomers produced positive results in genetic toxicity

Based on statistically significantly increased tumor incidences in rats, mice and dogs. Additional support is provided by positive evidence of genotoxicity and struc

Based on an increased incidence of skin papillomas in mice in an initiation-promotion study. The three cresol isomers produced positive results in genetic toxicity

Sufficient evidence from animal experiments: thyroid tumors in male and female rats, and liver carcinoma/adenoma in the female mice with a significant positive

No human data and no animal data available.

Based on an increased incidence of skin papillomas in mice in an initiation-promotion study. The three cresol isomers produced positive results in genetic toxicity

Based on no human data and inadequate data from animal bioassays.

The classification is based on increased incidence of hepatocellular carcinomas and adenomas in female mice.
Based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.

In accordance with the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999) data are inadequate for an assessment of the human carcino
Under the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996), the carcinogenic potential of ACN following inhalation, oral, or dermal exposu
Based on no human data and no animal data.
No human data or animal data.

Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the potential carcinogenicity of acrolein cannot be determined because th

In accordance with the Guidelines for Carcinogen Risk Assessment U.S. EPA, 2005, acrylamide (AA) is characterized as "likely to be carcinogenic to humans."

The observation of a statistically significant increase in incidence of lung cancer in exposed workers and observation of tumors, generally astrocytomas in the brai

No human and no animal cancer data were available. Adiponitrile was negative for mutagenicity in Salmonella with and without activation.

Aldicarb was not found to induce statistically significant increases in tumor incidence in mice or rats in feeding studies or mice in a skin painting study. In the feedi

Orally administered aldrin produced significant increases in tumor responses in three different strains of mice in both males and females. Tumor induction has bee

Classification is based on a low (but biologically important) incidence of forestomach tumors in female mice and positive results in a variety of genetic toxicity test

Dietary alpha-HCH has been shown to cause increased incidence of liver tumors in five mouse strains and in Wistar rats.

No human data and no animal data
No human data and no animal data

Induction of tumors of the spleen and the body cavity in two strains of rat, and some supporting genetic toxicological evidence.
Based on no human data and inadequate data from animal bioassays.

Based on an increase in thyroid gland follicular cell tumors in male rats and supportive findings in pituitary/thyroid hormone activity.

Based on no human data and sufficient data from animal bioassays including increased incidence of liver tumors and/or neoplastic nodules in three strains of mal

Observation of increased mortality and incidence of lung cancer, mesotheliomas and gastrointestinal cancer in occupationally exposed workers are consistent acr
Based on no human data and inadequate animal data.

Azobenzene induced invasive sarcomas in the spleen and other abdominal organs in male and female F344 rats following dietary administration. It is genotoxic a
Under the Proposed Guidelines for Carcinogenic Risk Assessment (U.S. EPA, 1996), barium is considered not likely to be carcinogenic to humans following oral e

Under EPA's proposed guidelines for carcinogen risk assessment (U.S. EPA, 1996), Bentazon would be characterized as not likely to be carcinogenic to humans t
Based on no human data and sufficient data from animal bioassays. Benz[a]anthracene produced tumors in mice exposed by gavage; intraperitoneal, subcutaneo

Under the proposed revised Carcinogen Risk Assessment Guidelines (U.S. EPA, 1996), benzene is characterized as a known human carcinogen for all routes of e

Observation of increased incidence of bladder cancer and bladder cancer-related deaths in exposed workers

Human data specifically linking benzo[a]pyrene (BAP) to a carcinogenic effect are lacking. There are, however, multiple animal studies in many species demonstr
Based on no human data and sufficient data from animal bioassays. Benzo[b]fluoranthene produced tumors in mice after lung implantation, intraperitoneal (i.p.) o
Based on no human data and inadequate animal data from lung implant, skin-painting and subcutaneous injection bioassays.
Based on no human data and sufficient data from animal bioassays. Benzo[k]fluoranthene produced tumors after lung implantation in mice and when administere

No human data and inadequate data from animal bioassays

Based on inadequate human data and sufficient evidence of carcinogenicity in animals; namely, significantly increased incidences of benign and malignant tumor

Based on inadequate human data and sufficient evidence of carcinogenicity in animals; namely significantly increased incidences of benign and malignant tumors
Using the 1996 proposed Guidelines for Carcinogen Risk Assessment, inhaled beryllium would be characterized as a "likely" carcinogen in humans, and the huma

Increases in benign liver tumors in CF1 mice fed beta-HCH

No human data and inadequate studies in mice and rats. Results of genotoxicity tests are generally negative.

Positive carcinogenicity results in two strains of mice and evidence of mutagenicity

Statistically significant increases in lung tumors (oat cell carcinomas) observed in six studies of exposed workers and bioassay data from rats and mice.

Under the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996), Bromate should be evaluated as a likely human carcinogen by the oral route c
No data in humans or animals

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" of bromobenzene.

Based on the lack of data regarding the carcinogenicity of bromochloromethane in humans or animals; however, there are data indicative of genotoxic effects and

Based on inadequate human data and sufficient evidence of carcinogenicity in two animal species (mice and rats) as shown by increased incidence of kidney tum

Based on inadequate human data and sufficient evidence of carcinogenicity in animals, namely an increased incidence of tumors after oral administration of brom
Inadequate human and animal data: a single mortality study from which direct exposure associations could not be deduced and studies in several animal species
Based on no data regarding the carcinogenicity of bromotrichloromethane in humans or animals.

Based on statistically significant increase in mononuclear cell leukemia in female rats; the response in male rats was inconclusive and there was no such response

No human data and inadequate data in animals
Limited evidence from occupational epidemiologic studies of cadmium is consistent across investigators and study populations. There is sufficient evidence of ca

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), carbon tetrachloride is "likely to be carcinogenic to humans."

In accordance with U.S. EPA (2005a) Guidelines for Carcinogen Risk Assessment, there is "inadequate information to assess the carcinogenic potential" of cerium in humans.

Under the 1996 proposed guidelines for carcinogen risk assessment (U.S. EPA, 1996), chloral hydrate shows suggestive evidence of human carcinogenicity by th

Under the 1996 Proposed Guidelines, chlordane would be characterized as a likely carcinogen by all routes of exposure.
Under the U.S. EPA Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), chlordecone is "likely to be carcinogenic to humans" based on data from an

Under the draft Carcinogen Assessment Guidelines (U.S. EPA, 1996), the human carcinogenicity of chlorine dioxide cannot be determined because no satisfactor
Under the draft Carcinogen Assessment Guidelines (U.S. EPA, 1996), the human carcinogenicity of chlorite cannot be determined because of a lack of human da

No human data, inadequate animal data and predominantly negative genetic toxicity data in bacterial, yeast, and mouse lymphoma cells.

Lack of data concerning carcinogenicity in humans or animals.

Under the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996; U.S. EPA, 1999), chloroform is likely to be carcinogenic to humans by all route
The observation of an increased incidence of respiratory cancer in exposed workers and the observation of respiratory tumors in mice, rats, and hamsters expose

Using the Proposed Guidelines for Carcinogen Risk Assessment (EPA, 1996), there are inadequate data to determine the potential carcinogenicity of trivalent chr
Under the proposed guidelines (EPA, 1996), Cr(VI) would be characterized as a known human carcinogen by the inhalation route of exposure.; The oral carcinoge
No human data and sufficient data from animal bioassays. Chrysene produced carcinomas and malignant lymphoma in mice after intraperitoneal injection and ski

Based on no data in humans or animals and generally nonpositive results in mutagenicity assays.

Studies of coke oven workers have shown increased risk of mortality from cancer of the lung, trachea and bronchus; cancer of the kidney; cancer of the prostate;
There are no human data, inadequate animal data from assays of copper compounds, and equivocal mutagenicity data.

Limited evidence of the association between occupational creosote contact and subsequent tumor formation, sufficient evidence of local and distant tumor formati
Based on no human data and an increased incidence of hepatocellular carcinomas and hepatic neoplastic nodules (combined) in male F344 rats. The possible ca
Under the proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996), it is concluded that the carcinogenic potential of cumene cannot be determine

Pertinent data regarding carcinogenicity have not been located in the available literature.

Cyclohexane is characterized as "Data are inadequate for an assessment of human carcinogenic potential" (U.S. EPA, 1999).

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for decabromodiphenyl ether provides suggestive evidence of carcinoger

Based on no human data and inadequate data from animal bioassays.

Orally administered DEHP produced significant dose-related increases in liver tumor responses in rats and mice of both sexes.

Based on an absence of human data and increased incidence of liver tumors in female mice. Except for a positive dominant lethal assay, there was no evidence c

Based on no human data and sufficient data from animal bioassays. Dibenz[a,h]anthracene produced carcinomas in mice following oral or dermal exposure and ir
Based on no human data and no animal data for dibenzofuran alone.

Based on inadequate human data and limited evidence of carcinogenicity in animals; namely, positive carcinogenic evidence in B6C3Fl mice (males and females

Based on the lack of data regarding the carcinogenicity of dibromodichloromethane in humans or animals.

Pertinent data regarding carcinogenicity was not located in the available literature.

EPA believes that DCA is likely to be a carcinogen in humans.

Based on inadequate human data and sufficient evidence of carcinogenicity in animals; increased incidence of hepatocellular neoplasms and alveolar/bronchiolar

Significant increases in forestomach tumors in female and male B6C3F1 mice and leukemias and pancreatic acinar adenomas in Fischer 344 rats. Supporting evi

Dieldrin is carcinogenic in seven strains of mice when administered orally. Dieldrin is structurally related to compounds (aldrin, chlordane, heptachlor, heptachlor e

Using U.S. EPA's revised draft 1999 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), diesel exhaust (DE) is likely to be carcinogenic to humans by

Pertinent data regarding carcinogenicity were not located in the available literature.

No human or animal carcinogenic studies found in the available literature.

No human data and no animal data available.

No data from cancer bioassays or epidemiological studies are available.
Classification is based on an elevated combined incidence of pulmonary adenomas/carcinomas in male, but not in female, CD-1 mice. A rat study is undergoing f

Pertinent data regarding carcinogenicity was not located in the available literature.
Classification is based on induction of local carcinomas following inhalation and subcutaneous exposures in rats, tumor induction in rats following prenatal exposu

Dinoseb was not observed to be carcinogenic in two inadequate studies in rats and in mice. In a third study, an increase in benign liver tumors in female mice was

Oral administration of endrin did not produce carcinogenic effects in either sex of two strains of rats and three strains of mice. An NCI bioassay was suggestive of

Human data are inadequate. Multiple studies in rats and mice administered epichlorohydrin by various routes were positive. As epichlorohydrin is a strong alkylati
Based on no human data and inadequate data from animal bioassays.

Nonclassifiable due to lack of animal bioassays and human studies.

Based on no human data and inadequate animal data.

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), EGBE is deemed "not likely to be carcinogenic to humans" at environmental concentrati

Based on no human data and inadequate data from animal bioassays.
Based on no human data and inadequate data from animal bioassays.

Folpet has induced carcinoma and adenoma of the duodenum (an unusual site) in both sexes of both CD-1 and B6C3F1 mice. Folpet is also mutagenic in several

Fomesafen produced liver adenomas and carcinomas in both sexes of Charles River CD-1 mice.

Based on limited evidence in humans, and sufficient evidence in animals. Human data include nine studies that show statistically significant associations between

Increased incidence of urinary bladder tumors (adenomas/carcinomas combined) in male rats. No increase in tumor incidence occurred in female rats or in mice c

Dose-related increased incidence of neoplastic nodules, carcinomas and combined neoplasic nodules/carcinomas in the liver of female rats and increased inciden

Inadequate evidence for oncogenicity in animals. Glyphosate was originally classified as C, possible human carcinogen, on the basis of increased incidence of rer

Inadequate human data, but sufficient evidence exist from studies in which benign and malignant liver tumors were induced in three strains of mice of both sexes.

Sufficient evidence exists from rodent studies in which liver carcinomas were induced in two strains of mice of both sexes and in CFN female rats. Several structu

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" of 2,2',4,4',5,5'-h

Hexachlorobenzene, when administered orally, has been shown to induce tumors in the liver, thyroid and kidney in three rodent species.

Observation of renal neoplasms in male and female rats in one study.

In accordance with U.S. EPA's Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996), HCCPD is not likely to be a human carcinogen by the inh

Hepatic tumors in mice and rats by gavage

Observation of carcinomas in one mouse strain after oral exposure

Hepatocellular adenomas and carcinomas in female B6C3F1 mice.

Tumors have been induced in mice, rats and hamsters following oral, inhalation or intraperitoneal administration of hydrazine and sulfate. Hydrazine is mutagenic

Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), data are inadequate for an assessment of the carcinogenic potential of hy

Based on no human data and sufficient data from animal bioassays. Indeno[1,2,3-cd]pyrene produced tumors in mice following lung implants, subcutaneous injec

Based on no data in humans; limited evidence of carcinogenicity of one tumor type in one sex of one animal species as shown by an increase of preputial gland c

Based on no data in humans and animals.

Based on a statistically significant increased incidence of benign liver tumors in one species.

Sufficient animal evidence. Ten rat bioassays and one mouse assay have shown statistically significant increases in renal tumors with dietary and subcutaneous e
Limited evidence indicated linuron produced increases in both testicular hyperplasia and adenomas in male rats in three separate studies. Hepatocellular adenom

Existing studies are inadequate to assess the carcinogenicity of manganese.

Based on no data in humans and animals.

Based on the absence of data in humans and limited evidence of carcinogenicity in rats and mice. Focal papillary hyperplasia and squamous cell papillomas in th

Based on inadequate human and animal data. Epidemiologic studies failed to show a correlation between exposure to elemental mercury vapor and carcinogenici

Increased incidence of liver adenomas, carcinomas, and combined adenomas and carcinomas in male mice. There was no shortening of time to tumor. Short-terr

Human data are unavailable, and animal evidence is inconclusive.

Based on inadequate evidence of carcinogenicity in animals and no human data.
Using the Proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1996), the available data suggest that methyl chloride would be classified as an agen

Under the draft revised guidelines for carcinogen risk assessment (U.S. EPA, 1999), EPA concludes the data are inadequate for an assessment of human carcino

Under the Proposed Guidelines for Carcinogenic Risk Assessment (U.S. EPA, 1996), MMA is considered not likely to be carcinogenic to humans by any route of e

Under U.S. EPA's 1996 Proposed Guidelines for Carcinogen Risk Assessment, the carcinogenic potential of MDI/PMDI would be characterized as "cannot be dete
Based on inadequate data in humans and limited evidence of carcinogenicity in animals. Male ICR and B6C3F1 mice exposed to methylmercuric chloride in the d

Classification is based on the appearance of proliferative liver lesions (combined neoplastic nodules and carcinomas) at highest dose tested (3000 ppm) in female

No human data and inadequate evidence ffom animal bioassays. Metribuzin did not increase the incidence of tumors in a lifetime dietary study using CD-1 mice v

Based on inadequate human data and equivocal evidence of carcinogenicity from animal bioassays. A 2-year bioassay showed a marginal increase in mononucle

Using the 1996 Proposed Guidelines for Carcinogen Risk Assessment, the human carcinogenic potential of naphthalene via the oral or inhalation routes "cannot b

Based on no human and no animal cancer data.

No human data and no animal data available.

Based upon the observation of pulmonary carcinomas and malignant tumors at various sites in rats administered nickel carbonyl by inhalation and intravenous inj

Human data in which exposure to nickel refinery dust caused lung and nasal tumors in sulfide nickel matte refinery workers in several epidemiologic studies in dif
Increased risks of lung and nasal cancer in humans exposed to nickel refinery dust, most of which was believed to have been nickel subsulfide; increased tumor i

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), nitrobenzene is classified as "likely to be carcinogenic to humans" by any route of expo

Pertinent data regarding carcinogenicity have not been located in the available literature.

Increased incidence of liver tumors and tumors at other sites in three strains of rats and in hamsters

Induction of tumors at multiple sites in both rodent and nonrodent species exposed by various routes.

Induction of tumors at multiple sites in both rodents and nonrodent mammals exposed by various routes.

Increased incidences of several tumor types in rats, mice, and hamsters exposed by various routes.

Increased tumor incidence at multiple sites in two rodent species and in monkeys administered the compound by various routes

Increased incidence of bladder tumors in male and female rats and reticulum cell sarcomas in mice, and structural relationship to carcinogenic nitrosamines

Increased incidence of tumors of the liver and other sites in two rat strains

Tumors at more than one site have been observed in two rodent species administered nitrosopyrrolidine orally.
No human data and no animal data available.

No human data and no animal data available.

No cancer bioassays or epidemiological studies are available.

Based on no data in humans and animals.

Oryzalin produced tumors (generally benign) at multiple sites in male and female rats. It is structurally related to 2,4-diaminoanisole sulfate which causes malignai

No human data and no animal data available.

Based on an increased incidence of lung tumors in male and female mice, liver tumors in male mice and thyroid tumors in male rats. DDD is structurally similar to

Increased incidence of liver tumors including carcinomas in two strains of mice and in hamsters and of thyroid tumors in female rats by diet.

Observation of tumors (generally of the liver) in seven studies in various mouse strains and three studies in rats. DDT is structurally similar to other probable carci

Paraquat produced squamous cell carcinoma, an uncommon tumor, in the head region in both sexes of Fischer 344 rats.

Increased adrenal cortical tumors in female and male Osborne-Mendel rats and positive trends for thyroid follicular adenomas and pancreatic islet-cell carcinomas
No human data and inadequate animal data.

No human or animal studies found in the available literature

No human or animal studies found in the available literature
No human or animal studies found in the available literature

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" of 2,2',4,4',5-pent
No human data and no animal data available.

Lack of data concerning carcinogenicity to humans or animals.

The classification is based on inadequate human data and sufficient evidence of carcinogenicity in animals: statistically significant increases in the incidences of r

Based on no human data and inadequate data from a single gavage study in rats and skin painting and injection studies in mice.

Under Draft Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the data regarding the carcinogenicity of phenol via the oral, inhalation, and dermal ex

Based on inadequate data in animals and no tumor data in humans. While phospine has not been associated with cancer in humans, there is some evidence of ch

A 1996 study found liver tumors in female rats exposed to Aroclors 1260, 1254, 1242, and 1016, and in male rats exposed to 1260. These mixtures contain overla

Statistically significantly increased incidence and dose-related trend in liver adenomas and carcinomas (combined) in both sexes of one strain of mouse.

In accordance with the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" for p

Based on inadequate human data and an increased incidence of benign and malignant tumors at the site of exposure in two species of animals, when exposed by

Based on no human data and inadequate data from animal bioassays.

Quinoline is considered likely to be carcinogenic in humans in accordance with proposed EPA carcinogen risk assessment guidelines (U.S. EPA, 1996) on the bas

No human data and sufficient evidence from animal studies. Chronic inhalation studies showed that several types of RCFs induced mesotheliomas and lung tumo

Based on inadequate human data and inadequate evidence of carcinogenicity in animals. The evidence for various selenium compounds in animal and mutagenic
Based on inadequate human data and inadequate evidence of carcinogenicity in animals. The evidence for various selenium compounds in animal and mutagenic
Based on inadequate data from human studies and sufficient evidence in animals. When administered orally, selenium sulfide produced hepatocellular carcinoma

In animals, local sarcomas have been induced after implantation of foils and discs of silver. However, the interpretation of these findings has been questioned due

Based on no human carcinogenicity data and inadequate animal data.

Assays in four strains of mice have yielded positive carcinogenicity results for t-HCH administered in the diet.

No human data and no animal data available.

Lack of data concerning carcinogenicity in humans or animals.

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c
Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c
Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c
Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005a), the database for thallium and compounds provides "inadequate information to assess c

No human data and inadequate animal data. Toluene did not produce positive results in the majority of genotoxic assays.

The classification is based on increased incidence of hepatocellular tumors in mice and thyroid tumors in rats and is supported by mutagenicity in Salmonella.

Based on no human or animal cancer data.
No human data and no animal data available.

There are no data in humans concerning development of cancer following exposure to tributyltin oxide (TBTO). Cancer bioassays following oral exposure have be

The classification is based on a lack of human data and limited evidence of an increased incidence of liver neoplasms in both sexes of one strain of mice. No evic

Lack of data concerning carcinogenicity in humans or animals.

Classification is based on the induction of urinary tract tumors (renal pelvis carcinomas and urinary bladder papillomas) and thyroid tumors (adenomas/carcinoma

Under the Draft Revised Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), data are inadequate for an assessment of the carcinogenic potential of xy

Under the Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), there is inadequate information to assess carcinogenic potential of zinc, because studies

Precursor Effect / Tumor Type
Hepatocellular carcinoma and adenoma
ırade 1,1,1-trichloroethane has been shown to be weakly mutagenic, although the contaminant, 1,4-dioxane, a known animal carcinogen, m
Hepatocellular carcinoma
Hepatocelluar carcinoma

lenocarcinomas and hemangiosarcomas in female rats and an increased incidence of hepatocellular carcinomas and benign uterine polyps

not sufficient evidence to assess human carcinogenic potential following inhalation exposure in studies in rodents. Male mice developed kid

Nasal cavity (includes adenoma, adenocarcinoma, papillary adenoma, squamous cell carcinoma, and or/papilloma), hemangiosarcomas, mesotheliomas

Hemangiosarcomas

Hepatocellular carcinomas and neoplastic liver nodules

Leukemia

Bronchioalveolar adenoma

Leukemia

served in Salmonella with and without metabolic activation.
is supported by evidence of mutagenicity.

studies both alone and in combination.

tural relationship to the known human bladder carcinogen benzidine.

studies both alone and in combination.

trend in male mice. There is evidence of mutagenic activity. There are no human data.

studies both alone and in combination.

Nasal squamous cell carcinoma or adenocarcinoma

genic potential of acetone.
re is best characterized as "cannot be determined because the existing evidence is composed of conflicting data (e.g., some evidence is su

e existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure. There a

Thyroid tumors and tunica vaginalis mesotheliomas

Respiratory cancer

ng studies there were, however, significant trends in pituitary tumors in female rats and fibrosarcomas in the male mouse. This evidence, to

Liver carcinoma

s. Allyl chloride is an alkylating agent and structurally related to probable human carcinogens.

Hepatic nodules and hepatocellular carcinomas

Neoplastic liver nodules and carcinomas

Lung cancer

Lung cancer and mesothelioma

Abdominal cavity sarcomas
xposure and its carcinogenic potential cannot be determined following inhalation exposure.

y any route of exposure.
us or intramuscular injection; and topical application. Benz[a]anthracene produced mutations in bacteria and in mammalian cells, and transl

Leukemia

Bladder tumors

ating BAP to be carcinogenic following administration by numerous routes. BAP has produced positive results in numerous genotoxicity ass
r subcutaneous (s.c.) injection, and skin painting.

d with a promoting agent in skin-painting studies. Equivocal results have been found in a lung adenoma assay in mice. Benzo[k]fluoranthen

s at multiple sites in one strain of female mice treated orally, dermally, and by inhalation. There is also evidence of mutagenicity in a variety

; at multiple sites in both sexes of mice and a significant increase in thyroid tumors in female rats. There was evidence of mutagenicity in a
Lung cancer

Hepatic nodules and hepatocellular carcinomas

Hepatomas

Respiratory tract tumors

›f exposure. Insufficient data are available to evaluate the human carcinogenic potential of Bromate by the inhalation route.

l structural relationships to halogenated methanes classified as B2 probable human carcinogens.

ors and tumors of the large intestine in male and female rats, kidney tumors in male mice, and liver tumors in female mice.

Neoplastic lesions in the large intestine
with too few animals, too brief exposure or observation time for adequate power. Bromomethane has shown genotoxicity.

e in mice.

Lung, trachea, bronchus cancer deaths

Pheochromocytoma

e oral route of exposure.

Hepatocellular carcinoma
oral cancer bioassay in rats and mice demonstrating an increase in the incidence of hepatocellular carcinomas in both sexes of both species

y human or animal studies assessing the chronic carcinogenic potential of chlorine dioxide have been located.
ta and limitations in animal studies.

Hepatocellular carcinoma
d by inhalation forms the basis for this classification.

ɔmium, as discussed below. However, the classification of hexavalent chromium as a known human carcinogen raises a concern for the car
Lung cancer
n carcinomas in mice following dermal exposure. Chrysene produced chromosomal abnormalities in hamsters and mouse germ cells after ɡ

Respiratory cancer

ion after dermal application to mice, and some evidence of mutagenic activity, as well as the well-documented carcinogenicity of other coal
rcinogenicity of crotonaldehyde is supported by genotoxic activity and the expected reactivity of croton oil and aldehyde. Crotonaldehyde is
d because no adequate data, such as well-conducted long-term animal studies or reliable human epidemiological studies, are available for ɑ

ıic potential.

ɔf genotoxicity; this compound does, however, exhibit structural relationships to other nongenotoxic compounds classified as probable and p

ıjection site tumors in several species following subcutaneous or intramuscular administration. Dibenz[a,h]anthracene has induced DNA dar

), together with positive mutagenicity data, and structural similarity to other trihalomethanes, which are known animal carcinogens.

Combined adenomas and carcinomas

dence included observation of tumors at other sites in the rat and observation of mutagenicity for both dichlorvos and a major metabolite di

Liver carcinoma

inhalation from environmental exposures.

urther evaluation.

re, and evidence suggestive of carcinogenicity in hamsters and mice by inhalation. Dimethyl sulfate alkylates cellular macromolecules and i

not considered to be treatment-related. The increase was much lower in the high dose than the mid dose, there were no decreases in time

responses in male and female rats although NCI reported a no evidence conclusion. The inadequacies of several of the bioassays call into

Nasal cavity tumors

ons at or below the RfD and RfC, based on laboratory animal evidence, mode-of-action information, and limited human study information.

in vitro assays and is a structural analogue of captan, which has been shown to induce carcinoma in the duodenum of two mouse strains.

Squamous cell carcinoma

of either sex.

ıce of liver nodules and carcinomas and urothelial tumors of the bladder in male rats.

ıal tumors in mice. Following independent review of the slides the classification was changed to D on the basis of a lack of statistical signific

Hepatocellular carcinomas

Hepatocellular carcinomas

exabromodiphenyl ether.

Hepatocellular carcinoma

Renal tubular adenomas and adenocarcinomas

alation route based on current data indicating no evidence of cancer in well-conducted bioassays in two species of rodents; the absence of i

Liver tumors (adenomas and carcinomas; neoplastic nodules and hepatocellular carcinomas)

Hepatocellular carcinomas

Nasal cavity adenoma or adenocarcinoma

drogen sulfide.

tion and dermal exposure. Indeno[1,2,3-cd]pyrene tested positive in bacterial gene mutation assays.

arcinomas in male rats. The apparent renal tubular cell tumor in the male rat is associated with alpha-2u-globulin, considered to be of questi

xposure to several soluble lead salts. Animal assays provide reproducible results in several laboratories, in multiple rat strains with some ev
as were observed in female mice in a single study at the highest dose group tested; the tumors were benign and showed no progression tow

e forestomach as well as thyroid follicular cell adenomas and carcinomas were observed in male rats gavaged with mercuric chloride for 2 y

ty; the findings in these studies were confounded by possible or known concurrent exposures to other chemicals, including human carcinoge

n tests and structure/activity study were not supportive of a higher classification.

t whose carcinogenic potential cannot be determined.

genic potential of MEK. Studies of humans chronically exposed to MEK are inconclusive, and MEK has not been tested for carcinogenicity i

:xposure because it has been evaluated in four well-conducted chronic inhalation studies in three appropriate animal species without demon

ermined," but for which there is suggestive evidence that raises concern for carcinogenic effects.
iet had an increased incidence of renal adenomas, adenocarcinomas and carcinomas. The tumors were observed at a single site and in a s

rats.

when compared with both concurrent and historic controls. In a 2-year feeding study in Wistar rats, no significant differences in neoplastic fin

ar cell leukemia in female F344/N rats. No evidence of carcinogenic activity was reported in male rats or in male or female B6C3F1 mice. C

›e determined" at this time based on human and animal data; however, there is suggestive evidence (observations of benign respiratory tum

ection, respectively. Nickel administered as nickel carbonyl binds to DNA.

Lung cancer
Lung cancer

Liver hepatocellular adenomas or carcinomas, kidney tubular adenomas or carcinomas, thyroid follicular cell adenomas or carcinomas

Liver tumors

Liver tumors

Bladder and esophagus tumors

Hepatocellular carcinoma and adenoma

nt tumors at similar sites.

, and is a known metabolite of DDT, a probable human carcinogen.

Liver tumors, benign and malignant

s in male rats in one study.

tabromodiphenyl ether (BDE-99).

nultiple biologically significant tumor types (hepatocellular adenomas and carcinomas, adrenal medulla pheochromocytomas and malignant

:posure routes are inadequate for an assessment of human carcinogenic potential. Phenol was negative in oral carcinogenicity studies in rat

ıromosomal damage (transient chromatid deletions, gaps and breaks, persistent chromosomal translocations). A relationship between these

Liver hepatocellular adenomas, carcinomas, cholangiomas, or cholangiocarcinomas

›ropionaldehyde.

Nasal cavity hemangioma or hemangiosarcoma

sis of observations of exposure-related increased incidence of an unusual malignant tumor in multiple strains of rats and mice, multiple expe

rs in rats and hamsters. Administration of RCFs by intraperitoneal/intrapleural injection or intratracheal instillation also caused peritoneal/ple

city studies is conflicting and difficult to interpret; however, evidence for selenium sulfide is sufficient for a B2 (probable human carcinogen)
city studies is conflicting and difficult to interpret; however, evidence for selenium sulfide is sufficient for a B2 (probable human carcinogen)
is in both sexes of F344 rats and female B6C3F1 mice and alveolar/bronchiolar carcinomas or adenomas in female B6C3F1 mice.

e to the phenomenon of solid-state carcinogenesis in which even insoluble solids such as plastic have been shown to result in local fibrosarc

Liver nodules and hepatocellular carcinomas

:arcinogenic potential."

:arcinogenic potential."

:arcinogenic potential."
:arcinogenic potential."

:arcinogenic potential."
:arcinogenic potential."
:arcinogenic potential."

Hepatocellular carcinomas and neoplastic nodules

ɛen conducted in rats and mice. Because of the questionable data from the bioassay in rats, EPA assigns TBTO to the "cannot be determine

ɗence of carcinogenicity was found in rats. Results from genotoxicity studies are mixed; trichloroacetic acid does not appear to be a point mu

s combined) in one animal species (F344 rats) in one study. Trifluralin is structurally similar to ethalfluralin, a carcinogen in the rat.

Liver angiosarcomas, angiomas, hepatomas, and neoplastic nodules

lenes. Adequate human data on the carcinogenicity of xylenes are not available, and the available animal data are inconclusive as to the at

s of humans occupationally-exposed to zinc are inadequate or inconclusive, adequate animal bioassays of the possible carcinogenicity of zi

Inhalation Unit Risks

Extrapolation Method
Linearized multistage procedure, extra risk
ay be responsible for this response.
Linearized multistage procedure, extra risk
Linearized multistage procedure, extra risk

in mice.

ney tumors at one exposure in a lifetime bioassay, a finding tempered by the absence of similar results in female mice or male or fem

Multistage-Weibull model; linear extrapolation from lower 95% confidence limit on dose associated with extra risk (adjusted for background) at point of departure at lower end of data range.

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linear extrapolation from LEC01 (0.254 ppm); LEC01 derived from linear relative rate model (RR = 1 + (B)(x)) using lifetable analysis with leukemia incidence data; an adjustment factor of 2 was applied.

Linearized multistage model, extra risk

Linearized multistage procedure, extra risk

Linearized multistage-variable exposure

ggestive of carcinogenic effects, but other equally pertinent evidence does not confirm any concern)."

are no adequate human studies of the carcinogenic potential of acrolein. Collectively, experimental studies provide inadequate evidenc

Multistage model with linear extrapolation from the point of departure (BMDL), summed risk.

Average relative risk

gether with the fact that less than maximum tolerated doses were used, indicates that the available assays are inadequate to assess th

Linearize multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Absolute-risk linear model

Additive risk of lung cancer and mesothelioma, using relative risk model for lung cancer and absolute risk model for mesothelioma

Linearized multistage procedure, extra risk

formed mammalian cells in culture.

Low-dose linearity utilizing maximum likelihood estimates

One-hit with time factor, extra risk

ays.

e is mutagenic in bacteria.

of test systems.

variety of test systems.
Relative risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Two stage; only first affected by exposure; extra risk

Log-probit model with linear extrapolation from the POD (LEC10)

Linearized multistage procedure, extra risk
; (NCI, 1976a, b).

Linearized multistage procedure, extra risk

'cinogenic potential of trivalent chromium.
Multistage, extra risk
gavage exposure, positive responses in bacterial gene mutation assays and transformed mammalian cells exposed in culture.

Linearized multistage procedure

tar products to humans.
also a suspected metabolite of N-nitrosopyrrolidine, a probable human carcinogen.
ıny assessment.

›ossible human carcinogens.

nage and gene mutations in bacteria as well as gene mutations and transformation in several types of mammalian cell cultures.

Linearized multistage procedure, extra risk

chloroacetaldehyde. A structurally related material, dichloropropene, also induces forestomach tumors in rodents.

Linearized multistage procedure, extra risk

s genotoxic.

to tumor, nor any evidence of any of the potentially predisposing lesions in the liver such as hypertrophy, hyperplasia or degeneration

question the strength of the reported negative findings. These inadequacies and the suggestive responses in the NCI bioassay do not

Linearized multistage procedure, extra risk

Linearized multistage procedure, additional risk

:ance and uncertainty as to a treatment-related effect.

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage, extra risk

Linearized multistage procedure, extra risk

ncreased deaths from cancer in the limited human occupational studies available; and lack of mutagenicity in a variety of test systems

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

ionable relevance to humans.

vidence of multiple tumor sites. Short term studies show that lead affects gene expression. Human evidence is inadequate.
ard malignancy.

ears. The relevance of the forestomach papillomas to assessment of cancer in humans is questionable because no evidence indicatec

ens, as well as lifestyle factors (e.g., smoking). Findings from genotoxicity tests are severely limited and provide equivocal evidence th

n animals by the oral or inhalation routes.

strating carcinogenic effects.

ingle species and single sex. The renal epithelial cell hyperplasia and tumors were observed only in the presence of profound nephrotc

dings between the test and control groups were found. Short-term studies in bacteria and mammalian systems suggest that metribuzin

Genotoxicity studies, both in vitro and in vivo, gave negative results.

iors and one carcinoma in female mice only exposed to naphthalene by inhalation [NTP, 1992a]). Additional support includes increase

Additive and multiplicative
Additive and multiplicative

Multistage model with linear extrapolation from the POD (LEC10).

Weibull, extra risk

Weibull, extra risk

Linearized multistage procedure, extra risk

Linearized multistage procedure, extra risk

Linear multistage procedure, extra risk

pheochromocytomas, and/or hemangiosarcomas and hemangiomas) in one or both sexes of B6C3F1 mice using two different prepara

s and mice, but questions remain regarding increased leukemia in male rats in the bioassay as well as the positive gene mutation data

genetic effects and the development of cancer in humans is sometimes postulated.

Linear extrapolation below LED10s

Linearized multistage procedure, extra risk

eriments using oral, i.p. and s.c. dosing at an early age. This determination is supported by studies that demonstrate that quinoline is ge

eural mesotheliomas or lung tumors in rats and hamsters.

classification.
classification.

omas.

Linearized multistage procedure

Linearized multistage procedure, extra risk

:d" category [U.S. EPA, 1996 (proposed)].

utagen.

LMS Method; LED 10/Linear Method; LMS Method; LED 10/Linear Method

ɔility of xylenes to cause a carcinogenic response. Evaluations of the genotoxic effects of xylenes have consistently given negative res

ıc are not available, and results of genotoxic tests of zinc have been equivocal.

Inhalation Unit Risks	Study Route
7.4 x 10-6 per ug/m3	Oral, gavage
5.8 x 10-5 per ug/m3	Oral, gavage
1.6 x 10-5 per ug/m3	Oral, gavage

ale rats and by the enzymatic differences (i.e., CYP2E1) between male mice and female mice, male and female rats, and hum

6 x 10-4 per ug/m3; 3.10-4 per ug/m3	Inhalation

2.6 x 10-5 per ug/m3	Oral, gavage
2.2 x 10-4 per ug/m3	Oral, diet
3 x 10-5 per ug/m3	Inhalation

4 x 10-6 per ug/m3	Inhalation

3.1 x 10-6 per ug/m3	Oral, diet

2.2 x 10-6 per ug/m3	Inhalation

:e that acrolein causes cancer in laboratory animals.

1 x 10-4 per ug/m3	Oral, drinking water

6.8 x 10-5 per ug/m3	Inhalation

ıe carcinogenic potential of aldicarb.

4.9x 10-3 per ug/m3	Oral, diet

1.8 x 10-3 per ug/m3	Oral, diet

7.1 x 10-6 per ug/m3	Oral, diet

4.3 x 10-3 per ug/m3	Inhalation, occupational exposure
2.3 x 10-1 per f/mL	Inhalation, occupational exposure

3.1 x 10-5 per ug/m3	Oral, diet
2.2 x 10-6 per ug/m3; 7.8 x 10-6 per ug/m3	Inhalation
6.7 x 10-2 per ug/m3	Inhalation, occupational exposure

2.4 x 10-3 per ug/m3	Inhalation, occupational exposure

5.3 x 10-4 per ug/m3	Oral, diet
3.3 x 10-4 per ug/m3	Oral, gavage followed by diet
6.2 x 10-2 per ug/m3	Inhalation

1.1 x 10-6 per ug/m3	Oral, gavage in corn oil
1.8 x 10-3 per ug/m3	Inhalation, occupational exposure

6 x 10-6 per ug/m3	Inhalation

1 x 10-4 per ug/m3

Oral, diet

2.3 x 10-5 per ug/m3

Oral, gavage

1.2 x 10-2 per ug/m3	Inhalation, occupational exposure
6.2 x 10-4 per ug/m3	Inhalation, occupational exposure

4.7 x 10-7 per ug/m3	Inhalation

4.6 x 10-3 per ug/m3	Oral, diet

which are often associated with known hepatocellular carcinogens.

support a Group E classification; rather a Group D classification best reflects the equivocal data.

1.2 x 10-6 per ug/m3	Inhalation

1.3 x 10-5 per ug/m3	Inhalation

1.3 x 10-3 per ug/m3	Oral, diet
2.6 x 10-3 per ug/m3	Oral, diet

4.6 x 10-4 per ug/m3	Oral, diet
2.2 x 10-5 per ug/m3	Oral, diet
1.3 per ug/m3	Oral, gavage
4.0 x 10-6 per ug/m3	Oral, gavage

4.9 x 10-3 per ug/m3	Inhalation

l that the papillomas progressed to malignancy. The relevance of the increase in thyroid tumors has also been questioned beca

at mercury adversely affects the number or structure of chromosomes in human somatic cells.

›xicity and were suggested to be a consequence of reparative changes in the cells. Several nonpositive cancer bioassays were

is not mutagenic.

in respiratory tumors associated with exposure to 1-methylnaphthalene.

2.4 x 10-4 per ug/m3	Inhalation
4.8 x 10-4 per ug/m3	Inhalation
4x10-5 per µg/m3	Inhalation

4.3 x 10-2 per ug/m3	Oral, drinking water
1.4 x 10-2 per ug/m3	Oral, drinking water
1.6 x 10-3 per ug/mg3	Oral, drinking water

6.1 x 10-4 per ug/m3	Oral, diet

9.7 x 10-5 per ug/m3	Oral, diet

ations of pentachlorophenol (PeCP). In addition, a high incidence of two uncommon tumors (adrenal medulla pheochromocyton

and the positive results in dermal initiation/promotion studies at doses at or above the maximum tolerated dose (MTD). No inh

1 x 10-4 per ug/m3

Oral, diet

3.7 x 10-6 per ug/m3	Inhalation

enotoxic.

5.1 x 10-4 per ug/m3	Oral, diet

3.2 x 10-4 per ug/m3	Oral, diet

4.4 x 10-6 per ug/m3; 4.4 x 10-6 per ug/m3; 8.8 x 10-6 per ug/m3; 8.8 x 10-6 per ug/m3

ults.

Critical Effects

Mineralization of the kidneys in males, hepatic clear cell change in females

Reduced body weight gain

Psychomotor impairment

Clinical serum chemistry
Mild lesions in liver, kidney, and thyroid
Kidney damage

Liver toxicity (fatty change)

Alterations in clinical chemistry and reduction in red cell mass
Kidney lesions

Increased liver-to-body weight ratio and hepatic microsomal enzyme induction

Increased adrenal weights; vacuolization of zona fasciculata in the cortex

Testicular atrophy, liver peliosis, and adrenal cortical degeneration

No adverse effects

Methemoglobinemia and spleen-erythorid cell hyperplasia

Chronic irritation

Liver/body weight ratio and hepatic microsomal enzyme induction

Nasal olfactory lesions

Histopathological changes in liver

Increased absolute and relative kidney weights

Increased liver weights and centilobular hypertrophy

Myocardial degeneration, hepatotoxicity and nephrotoxicity

Liver and kidney pathology
Increased urinary coproporphyrins (other effect: Reduced neonatal survival)

Liver effects

Decreased delayed hypersensitivity response
Hematologic, hepatic and renal toxicity
Clineral signs (lethargy, prostration, and ataxia) and hematological changes
Cataract formation
Neurotoxicity, Heinz bodies and biliary tract hyperplasia

Body weight changes and histopathological changes of internal organs (liver, spleen and kidneys)

Reproductive effects

Axonal swelling of the peripheral nerve

Kidney and liver toxicity

Pulmonary alveolar proteinosis

Decreased body weights and neurotoxicity

Changes in blood pressure and body weight; histopathological changes in liver, kidney, spleen

Decreased body weights and neurotoxicity

Internal hemorrhage, mortality

Male reproductive toxicity and other effects (other effect: increased liver and kidney weights)

Cataract formation

Hepatoxicity

Inhibition of brain ChE

Salivation, increased ALT and ornithine carbamyl transferase; significant increases in triglyceride and decreased blood glucose levels; histopathological changes i

Nephropathy

General toxicity

Mortality and kidney lesions

Degenerative nerve changes
Reduced pup weight

Hemosiderosis, hemolytic anemia

No adverse effects
Sweating as clinical sign of AChe inhibition (other effect: Clinical signs and symptoms of acetylcholinesterase inhibition including sweating, pinpoint pupils, leg we
Brain ChE inhibition in females

Liver toxicity

Decreased body weight
Impaired renal function and increased liver and kidney weights

Body weight and clinical parameters
Increased organ weights

Liver toxicity
Increased mean blood sugar concentration; slight hypothermia

Decreased body weight

No observed effects
Longevity, blood glucose, and cholesterol

Liver effects; organ weight changes

Reduced birth weights

Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythro

Hyperpigmentation, keratosis and possible vascular complications

Liver cell enlargement
Lower ovarian weight, lower liver/body weight
Decreased body weight gain (other effect: Cardiac toxicity and moderate-to-severe dilation of the right atrium)

Nephropathy

Mild cholinergic symptoms and RBD ChE inhibition
Decreased body weight gain, erthrocyte count and hemoglobin level
Decreased body weights in males, inflammatory foci in kidneys of females

Depressed erythrocyte counts

Decreased pup weanling weights

Blood loss into the gastrointestinal tract; coagulation defect in male and female dogs (other effect: Dose-related increase in red areas (presumed blood) in feces; (

Forestomach lesions, kidney toxicity
Decreased lymphocyte count

Brain cell vacuolization; liver cell alterations in females

No adverse effects observed

Small intestinal lesions
Dyspnea, abnormal appearance, liver enlargement

Decreased pup survival
Tremors
Decrease in hemoglobin and possible erythrocyte destruction

Reduced mean body weight
Decreased fetal weight (developmental)

Renal effects: urothelial hyperplasia

Hepatocellular cytomegaly in male B6C3F1 mice

Renal cytomegaly

Hepatic lesions
Epithelial hyperplasia of the forestomach

No adverse effects
No effects

Significantly increased liver-to-body weight and liver-to-brain weight ratios
Increased relative liver weight in male dogs

No adverse effect

Significant proteinuria

No adverse effects (other effect: weight loss, thyroid effects and myelin degeneration)
Reduced offspring body weight
Kidney and bladder toxicity
Decreased mean body weights
Kidney and liver toxicity

RBC and plasma cholinesterase inhibition, and testicular and uterine effects

Fetal toxicity/malformations

Elevated serum SDH activity

Decreased body weight
Reduced weight gain, organ weight changes, increased mortality

CNS depression and GI irritation in humans
Hepatocyte degeneration

Hepatic necrosis
Renal lesions (glomerulosclerosis) in female Wistar rats
Increase in WBC, decreased in RBC in females, increase in alkaline phosphatase in males

No observed adverse effects
No adverse effects (other effect: Weight loss, thyroid effects and myelin degeneration)

Neurodevelopmental effects
Neurodevelopmental effects

Histopathologic changes in liver
Decreased stool quantity, food consumption and body weight gains; hyperirritability (maternal effects)

Moderate/marked fatty cyst formation in the liver and elevated SGPT

Renal tubular epithelial vacuolation

Kidney, spleen, liver, and bone marrow toxicity
Decreased plasma ChE activity after 9 days

Decreased body weight

No effects observed
None reported

Decreased body and organ weights, histopathologic alterations in liver and kidney

Increased average kidney weight in female rats

No adverse effects (other effect: weight loss, thyroid effects and myelin degeneration)
No adverse effects (other effect: Weight loss, thyroid effects and myelin degeneration)
No adverse effects (other effect: Weight loss, thyroid effects and myelin degeneration)

Body weight depression
Testicular damage (other effect: testicular damage)

Reduced body weight gain preceding pregnancy; reduced body weight gain in offspring during weaning period
GI tract disturbances
Hematologic effects
Effects on the lungs, liver, kidney, thyroid and thyroid hormones in males and females and eyes of females

Increased kidney body weight ratio
Tremors

Neurobehavioral effects

ChE inhibition, optic nerve degeneration

Increased relative liver weight

Changes in body weight and liver weight increased liver weight of male and female parents; reduced ossification and slightly dilated ureters in fetuses; reduced of

Hepatic lesions

Increased mortality
Maternal and fetal toxicity

Lesions observed in the testes, cerebrum, cerebellum, and liver

Reduced body weight

Liver toxicity

Plasma and RBC ChE inhibition in males and females; brain ChE inhibition in males

Liver lesions

Decreased growth rate, food consumption and altered organ weights

Decreased body weight
Methemoglobin and sulfhemoglobin formation

No effects related to treatment
Increased absolute and relative liver weight
Brain ChE inhibition

Chronic kidney inflammation

Decreased fetal weight

Liver toxicity
Decreased body weight gain, and increased liver and kidney weights

Minimal lens opacity and cataracts

ChE inhibition, optic nerve degeneration
Abnormal pigments in blood

Thyroid toxicity

Reduced body weight gain in males and females; increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (other eff

Increased absolute and relative weights of stomach and small intestine
Mild histological lesions in liver, occasional convulsions

Plasma ChE inhibition
Plasma cholinesterase inhibition (other effect: inhibition of brain cholinesterase)

Mortality and body weight loss

Depressed body weights

Neurotoxicity

Liver and kidney toxicity

Kidney toxicity

Hemosiderin deposition in the liver

Increased incidence of thyroid hyperplasia

Kidney damage and reduced lifespan
Elevated serum bilirubin and AST levels, increased urinary volume

ChE inhibition

No adverse effects
Nephropathy, increased liver weights, hematological alterations, and clinical effects
Decreased RBC, packed cell volume and hemoglobin

Objectionable dental fluorosis, a cosmetic effect

Glomerulonephritis, atrophic testes, eye keratitis; decreased body weight and organ weights
Increased incidence of hepatocellular changes including fatty change and vacuolation (M); increased susceptibility to stress factors (F)
Decreased body weight and body weight gains in both doses; increased liver weights at high dose
Decreases in body weight gain; increase in plantar ulcer (females)

Decreased body weight gain, altered serum chemistry parameters

Cholinesterase inhibition, cholinergic symptoms, and increased liver weight
Reduced weight gain, histopathology in rats

Slight testicular degeneration

Hepatic lesions
Mild hepatocellular vacuolization

Liver and kidney toxicity

Increased absolute and relative kidney weights in males

Weight gain retardation, enlarged adrenals, hydropic renal pelvis and hematopoietic effects

Increased incidence of renal tubular dilation in F3b offspring

Reduced relative kidney weights in F0, F1, and F2b adults; reduced fertility in the F1/F2b generation
Reduced body weight gains in males, reduced serum sodium in males and females

Liver weight increases in males

Increased liver-to-body weight ratio in both males and females

Induced serum carboxyle sterase activity (other effect: increased liver-to-body weight ratio; increased liver porphyrins)

Neurobehavioral effects

Liver effects

Chronic irritation

Atrophy and degeneration of the renal tubules
Swollen salivary glands, status spongiosis in brain and optic nerve

Inflammation of the prostate

Decreased body weight

No adverse effects (other effect: Weight loss, thyroid effects and myelin degeneration)

Decreased body weight gain

Decreased body weight gain, skeletal myopathy, slight anemia, bone marrow hyperplasia, elevated serum SGOT, SGPT, CPK

Increased RBC Heinz bodies; decreased prostate weight

Hypoactivity and ataxia

No observed effects (other effect: kidney pathology)
Reduced hemoglobin concentration, lowered hematocrits, and altered organ weights

No adverse effects observed

Increased BUN; decreased serum AP and AST; decreased food consumption efficiency; increased heart/body weight
Increased absolute and relative liver weight; hepatocytomegaly in males

Abnormal pigments in blood

Liver effects

RBC ChE depression

No adverse effects (other effect: renal lesions)
Renal dysfunction

Increased thyroid weight
CNS effects (other effect: impairment of neurobehavioral function)

Increased splenic weight

Sedation and tonoclonic spasms; decreased food intake and body weights; hematologic effects
Autoimmune effects

Ataxia, delayed neurotoxicity and weight loss
Ataxia, delayed neurotoxicity and weight loss

Increased serum alkaline phosphatase levels and increased liver-to-brain weight ratio
Increased SGOT and SGPT levels

ChE inhibition

Increased SAP and SGPT, and decreased brain weight

Liver toxicity

Kidney and spleen pathology

Excessive loss of litters

Decreased pup body weight

None
RBC, ChE inhibition; reduced hemoglobin, hematocrit and RBCs

Developmental neuropsy chological impairment

Decreased boy weight gain (other effect: reduced pup weights and parental food consumption)

Liver and kidney effects, decreased body weight, mortality

Liver cytomegaly, fatty metamophosis, angiectasis, thyroid cystic follicles

Reproductive toxicity
Increased uric acid levels

No observed effects

Increased relative and absolute liver weights and degenerative liver lesions

Brain ChE inhibition
Decreased mean terminal body weights in males
Decreased body weight gain in parental animal and pups
Hypoactivity and ataxia

Decreased body and organ weights

Early clinical signs of methemoglobinemia in excess of 10% (0-3 months old infants formula)

Methemoglobinemia
Increased methemoglobin levels

Reduced weight gain in female rats, maternal/ fetal toxicity in rats, and equivocal evidence of developmental toxicity in rabbits

Splenomegaly, increased splenic hemosiderosis and hematopoiesis

Liver and thyroid effects

Liver cell enlargement

Decrease in body weight gain
Induction of hepatic enzymes; liver histopathology

Hepatic lesions

Increases in serum cholesterol, alkaline phosphatase, and relative liver and kidney weights, and decreases in alanine transaminase and adrenal weights

Increased levels of serum proteins and increased liver weights
Decreased body weight gain and food consumption

Increased absolute liver weight and nonneoplastic lesions

Liver lesions

Elevated liver weights, serum cholesterol, hepatic aminopyrine N-demethylase activity, and alanine transaminase levels

Chronic pneumonitis

Nonneoplastic lesions of splenic capsule

Increase in serum alkaline phosphatase and liver weight, and hepatic lesions
Neurobehavioral effects
Liver and kidney toxicity

Liver toxicity

Liver and kidney toxicity

Radioactive iodide uptake inhibition (RAIU) in the thyroid

Increased liver weights

No adverse effects
Decreased maternal weight gain

Renal damage

Reduced body weight (males), liver cell vacuolation, cholinesterase inhibition
Body weight and clinical parameters

Parturition mortality; forelimb hair loss
Lung and kidney histopathology
Increased liver weights

Transient plasma ChE depression (other effect: borderline ChE depression)

No observed effects (other effect: weight loss, thyroid effects, and myelin degeneration)

No observed effect (other effect: weight loss, thyroid effects and myelin degeneration)

Increase in SAP and liver weights, liver histopathology

No treatment related effects observed
Liver and kidney degeneration and bone marrow atrophy
No effects
Decreased weight gain, food consumption; increased relative liver weights

Increased relative spleen weight in females
No adverse effects observed at the HDT; reduced body weight gain; increased resorption, reduced body weight, delayed ossification (maternal and fetal)
Renal and hepatotoxicity
Decrease in body weight
Increase in male spleen weight and ChE depression in females
Gastric mucosal irritation

Decreased packed cell volume, hemoglobin, erythrocytes in females

Neurological dysfunction

Kidney effects (renal tubular pathology, decreased kidney weights)

Increased liver weights
No adverse effects reported

Reproductive toxicity
Reduced pup weight

Hypertrophy of adrenal cortex (both sexes); hematologic effects (males)

Clinical selenosis
Clinical selenosis

Mild anemia in males
Degenerative cardiomyopathy

Argyria

No observed effects (other effect: weight loss, thyroid effects, and myelin degeneration)
Reduction in weight gains; hemtological changes in females

Clinical sign (e.g., hunched postures) and reduced body weight)
No observed effects (other effect: weight loss, thyroid effects, and myelin degeneration)

Reduced body weight (other effect: reduced body weight and cataracts in females)
Increased heart weight in females and males; decreased testis weight and altered spermatogenesis in males

Rachitic bone
Toxicity/histopathology
Red blood cell and liver effects

Testicular atrophy

Depressed body weight gain in F1 females

Increase in thyroid/body weight ratio; slight increase in liver weights; elevated alkaline phosphatase

Hematologic effects in females

Hepatotoxicity in mice, weight gain in rats
Reduced body weight gain, increased liver and kidney weights, and RBC ChE inhibition

Histopathology of liver and thymus
Depressed RBC and plasma cholinesterase activity

Decrease in body weight, increase in BUN

Decreased body weight, decreased spermatogenesis, and histological evidence of hyperthyroidism

Neurotoxicity

Increased kidney weight

Decreased body weight gain in males; increased food and water consumption in males and females (other effect: Depressed body weight in parents and pups during lactation)
Increased serum alkaline phosphatase in male mice

Increased hemosiderin deposition, serum alkaline phosphatase, and liver weight in females
Centrilobular hepatocytomegaly in males

Immunosuppression

Survival and histopathology

Decreased fertility index and depressed body weight of dams

Increased liver weights; increase in methemoglobin

Initial body weight loss; moderate nephrotoxicity

Decreased hair cystine
Decreased body weight
Organ weight changes

Liver cell polymorphism
Increased prothrombin time
Decreased body weight, increased mortality

Decreases in erythrocyte Cu, Zn-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers

No observed effects (other effect: Weight loss, thyroid effects and myelin degeneration)
Reduction in food intake and body weight
Thyroid hyperplasia

RfD Values

Oral RfD
3 x 10-2 mg/kg-day
7 mg/kg-day (subchronic); 2 mg/kg-day (chronic)
3 x 101 mg/kg-day
4 x 10-3 mg/kg-day 5 x 10-3 mg/kg-day 5 x 10-2 mg/kg-day

5 x 10-2 mg/kg-day

6 x 10-3 mg/kg-day
3 x 10-4 mg/kg-day

5 x 10-3 mg/kg-day

1 x 10-2 mg/kg-day

9 x 10-3 mg/kg-day

9 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day

1 x 10-2 mg/kg-day

1 x 10-2 mg/kg-day

8 x 10-3 mg/kg-day

1 x 10-3 mg/kg-day

3 x 10-2 mg/kg-day

3 x 10-3 mg/kg-day

1 x 10-1 mg/kg-day
1 x 10-2 mg/kg-day

5 x 10-4 mg/kg-day

3 x 10-3 mg/kg-day
1 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day
2 x 10-3 mg/kg-day
2 x 10-3 mg/kg-day

6 x 10-4 mg/kg-day

5 x 10-3 mg/kg-day

5x10-3 mg/kg-day

5 x 10-4 mg/kg-day

4 x 10-3 mg/kg-day

5 x 10-2 mg/kg-day

1 x 10-3 mg/kg-day

5 x 10-2 mg/kg-day

8 x 10-3 mg/kg-day

1 x 10-2 mg/kg-day

2 x 10-3 mg/kg-day

6 x 10-2 mg/kg-day

4 x 10-3 mg/kg-day

2 x 10-2 mg/kg-day

0.9 mg/kg-day

1 x 10-1 mg/kg-day

1.3 x 10-2 mg/kg-day

0.002 mg/kg-day
5 x 10-1 mg/kg-day

1x10-2 mg/kg-day

1.5 x 10-1 mg/kg-day
1 x 10-3 mg/kg-day
1 x 10-3 mg/kg-day

3 x 10-5 mg/kg-day

2.5 x 10-1 mg/kg-day
5 x 10-3 mg/kg-day

4 x 10-4 mg/kg-day
3 x 10-4 mg/kg-day

9 x 10-3 mg/kg-day
2.5 x 10-3 mg/kg-day

2 x 10-1 mg/kg-day

3 x 10-1 mg/kg-day
4 x 10-4 mg/kg-day

1.3 x 10-2 mg/kg-day

7 x 10-5 mg/kg-day

2 x 10-5 mg/kg-day

3 x 10-4 mg/kg-day

9 x 10-3 mg/kg-day
5 x 10-2 mg/kg-day
3.5 x 10-2 mg/kg-day

0.2 mg/kg-day

4 x 10-3 mg/kg-day
3 x 10-2 mg/kg-day
2.5 x 10-2 mg/kg-day

3 x 10-1 mg/kg-day

5 x 10-2 mg/kg-day

3.0 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day
4 x 10-3 mg/kg-day

3 x 10-3 mg/kg-day

4 mg/kg-day

2 x 10-3 mg/kg-day
8 x 10-2 mg/kg-day

1 x 10-4 mg/kg-day
1.5 x 10-2 mg/kg-day
4 x 10-2 mg/kg-day

5 x 10-2 mg/kg-day
2 x 10-1 mg/kg-day

4 x 10-3 mg/kg-day

8 x 10-3 mg/kg-day (chronic)

2 x 10-2 mg/kg-day

2 x 10-2 mg/kg-day
1.4 x 10-3 mg/kg-day

2 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day

2 x 10-1 mg/kg-day
5 x 10-2 mg/kg-day

1 mg/kg-day

5 x 10-4 mg/kg-day (water); 1 x 10-3 mg/kg-day (food)

4 x 10-2 mg/kg-day
5 x 10-1 mg/kg-day
2 x 10-3 mg/kg-day
1.3 x 10-1 mg/kg-day
1 x 10-1 mg/kg-day

5 x 10-3 mg/kg-day

1 x 10-1 mg/kg-day

0.004 mg/kg-day

1 x 10-2 mg/kg-day
1 x 10-1 mg/kg-day

1 x 10-1 mg/kg-day
1.5 x 10-2 mg/kg-day

5 x 10-4 mg/kg-day
0.0003 mg/kg-day
2 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day
5 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day
3 x 10-2 mg/kg-day

2 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day

1 x 10-2 mg/kg-day

1.5 x 10-2 mg/kg-day

2 x 10-1 mg/kg-day
3 x 10-3 mg/kg-day

5 x 10-2 mg/kg-day

1.5 mg/kg-day
3 x 10-3 mg/kg-day

5 x 10-3 mg/kg-day

1 x 10-1 mg/kg-day

2 x 10-2 mg/kg-day
4 x 10-2 mg/kg-day
9 x 10-2 mg/kg-day

5 mg/kg-day
2 x 10-1 mg/kg-day

5 x 10-3 mg/kg-day
1 x 10-2 mg/kg-day
7.5 x 10-3 mg/kg-day
1 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day
2.5 x 10-2 mg/kg-day

7x10-3 mg/kg-day

4 x 10-5 mg/kg-day

2 x 10-2 mg/kg-day

6 x 10-1 mg/kg-day

2 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day
3 x 10-2 mg/kg-day

4 x 10-3 mg/kg-day

2 x 10-1 mg/kg-day

6 x 10-2 mg/kg-day

5 x 10-4 mg/kg-day

5 x 10-5 mg/kg-day

8 x 10-1 mg/kg-day

8 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day

8 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day
2 x 10-4 mg/kg-day

1 x 10-1 mg/kg-day

1 x 10-3 mg/kg-day

3 x 10-2 mg/kg-day
2.5 x 10-2 mg/kg-day

2.2 x 10-3

4 x 10-5 mg/kg-day
2 x 10-3 mg/kg-day

4 x 10-3 mg/kg-day

6 x 10-3 mg/kg-day

2 x 10-2 mg/kg-day
3 x 10-4 mg/kg-day

5 x 10-3 mg/kg-day
5 x 10-4 mg/kg-day

9 x 10-1 mg/kg-day

2 x 10-1 mg/kg-day

1 x 10-5 mg/kg-day

1 x 10-1 mg/kg-day

2 mg/kg-day

0.1 mg/kg-day

8 x 10-5 mg/kg-day

3 mg/kg-day
8 x 10-3 mg/kg-day

2.5 x 10-4 mg/kg-day

1.3 x 10-2 mg/kg-day
4 x 10-2 mg/kg-day
4 x 10-2 mg/kg-day

6 x 10-2 mg/kg-day

8 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day
6 x 10-2 mg/kg-day
1 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day

2 x 10-3 mg/kg-day
2 x 10-1 mg/kg-day

3 mg/kg-day

1 x 10-3 mg/kg-day
3 x 10-3 mg/kg-day

3 x 10-4 mg/kg-day

4 x 10-4 mg/kg-day

4 x 10-4 mg/kg-day

1 x 10-1 mg/kg-day

5 x 10-5 mg/kg-day
1.3 x 10-2 mg/kg-day

5 x 10-4 mg/kg-day

1.3 x 10-5 mg/kg-day

2 x 10-3 mg/kg-day

2x10-4 mg/kg-day

8 x 10-4 mg/kg-day

6 x 10-3 mg/kg-day

1 x 10-3 mg/kg-day
3 x 10-4 mg/kg-day

3 x 10-3 mg/kg-day

3.3 x 10-2 mg/kg-day

2 x 10-2 mg/kg-day

1.3 x 10-2 mg/kg-day

2.5 x 10-1 mg/kg-day

4 x 10-2 mg/kg-day

3 x 10-1 mg/kg-day

2 x 10-1 mg/kg-day
1.5 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day

5 x 10-2 mg/kg-day
2 x 10-3 mg/kg-day

2 x 10-3 mg/kg-day

2 x 10-1 mg/kg-day

2 x 10-2 mg/kg-day

1 x 10-1 mg/kg-day
5 x 10-1 mg/kg-day

5 x 10-3 mg/kg-day
1.4 x 10-1 mg/kg-day

1 x 10-4 mg/kg-day

3 x 10-2 mg/kg-day
3 x 10-4 mg/kg-day

3 x 10-5 mg/kg-day
3 x 10-5 mg/kg-day

6 x 10-2 mg/kg-day
1 x 10-4 mg/kg-day

5 x 10-5 mg/kg-day

5 x 10-1 mg/kg-day

1 x 10-3 mg/kg-day

2.5 x 10-2 mg/kg-day

5 x 10-3 mg/kg-day

0.6 mg/kg-day

1.4 mg/kg-day
2.5 x 10-4 mg/kg-day

1 x 10-4 mg/kg-day (low end of BMDL05 range); 1 x 10-4 mg/kg-day (high end of BMDL05 range)

1.5 x 10-1 mg/kg-day

2.5 x 10-2 mg/kg-day

2 x 10-4 mg/kg-day

2 x 10-3 mg/kg-day
5 x 10-3 mg/kg-day

1 x 10-1 mg/kg-day

6 x 10-3 mg/kg-day

2 x 10-3 mg/kg-day
2 x 10-2 mg/kg-day
1 x 10-1 mg/kg-day
1 x 10-1 mg/kg-day

2 x 10-2 mg/kg-day

1.6 mg/kg-day

1 x 10-1 mg/kg-day
2x10-3 mg/kg-day

1 x 10-1 mg/kg-day

2 x 10-3 mg/kg-day

4 x 10-2 mg/kg-day

7 x 10-4 mg/kg-day

2 x 10-2 mg/kg-day
3 x 10-3 mg/kg-day

5 x 10-2 mg/kg-day

5 x 10-2 mg/kg-day

5 x 10-3 mg/kg-day
2.5 x 10-2 mg/kg-day

3 x 10-3 mg/kg-day

5 x 10-4 mg/kg-day

1.3 x 10-2 mg/kg-day

4.5 x 10-3 mg/kg-day

4 x 10-3 mg/kg-day

4 x 10-2 mg/kg-day
1x10-4 mg/kg-day
8 x 10-4 mg/kg-day

3 x 10-3 mg/kg-day

3 x 10-2 mg/kg-day

7 x 10-4 mg/kg-day

5 x 10-2 mg/kg-day

2.5 x 10-1 mg/kg-day
3 x 10-1 mg/kg-day

8 x 10-5 mg/kg-day

2 x 10-2 mg/kg-day
3 x 10-4 mg/kg-day

2 x 10-5 mg/kg-day
2 mg/kg-day
7 x 10-2 mg/kg-day

1 x 10-2 mg/kg-day

5 x 10-2 mg/kg-day

2 x 10-1 mg/kg-day

9 x 10-3 mg/kg-day

1.5 x 10-2 mg/kg-day
4 x 10-3 mg/kg-day
7.5 x 10-2 mg/kg-day
1.3 x 10-2 mg/kg-day

5 x 10-3 mg/kg-day
2 x 10-2 mg/kg-day (Maternal toxicity and fetotoxicity)
2 x 10-3 mg/kg-day
2 x 10-2 mg/kg-day
2 x 10-2 mg/kg-day
1.3 x 10-2 mg/kg-day

2.5 x 10-1 mg/kg-day

2.5 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day

1 x 10-3 mg/kg-day
5 x 10-4 mg/kg-day

3 x 10-2 mg/kg-day
4 x 10-3 mg/kg-day

2.5 x 10-3 mg/kg-day

5 x 10-3 mg/kg-day
5 x 10-3 mg/kg-day

9 x 10-2 mg/kg-day
2.5 x 10-2 mg/kg-day

5 x 10-3 mg/kg-day

1 x 10-1 mg/kg-day
5 x 10-3 mg/kg-day

4 x 10-3 mg/kg-day
4 x 10-2 mg/kg-day

3 x 10-2 mg/kg-day
2 x 10-5 mg/kg-day

6 x 10-1 mg/kg-day
3 x 10-4 mg/kg-day
2 x 10-1 mg/kg-day

2.5 x 10-2 mg/kg-day

7 x 10-2 mg/kg-day

1.3 x 10-2 mg/kg-day

1 x 10-3 mg/kg-day

1 x 10-2 mg/kg-day
3 x 10-2 mg/kg-day

1 x 10-7 mg/kg-day
5 x 10-4 mg/kg-day

1 x 10-2 mg/kg-day

8 x 10-2 mg/kg-day

5 x 10-3 mg/kg-day

0.8 mg/kg-day

7.5 x 10-3 mg/kg-day
2 x 10-2 mg/kg-day

1.3 x 10-2 mg/kg-day
1 x 10-2 mg/kg-day

3 x 10-4 mg/kg-day

3 x 10-1 mg/kg-day

3 x 10-3 mg/kg-day

7.5 x 10-3 mg/kg-day

3 x 10-3 mg/kg-day

9 x 10-3 mg/kg-day
1 x 10-3 mg/kg-day
2.5 x 10-2 mg/kg-day

3 x 10-3 mg/kg-day
3 x 10-4 mg/kg-day
0.2 mg/kg-day

0.3 mg/kg-day

5 x 10-2 mg/kg-day
3 x 10-4 mg/kg-day
5 x 10-2 mg/kg-day

POD	Overall Confidence	QuickView ?	IRIS Summary ?	Tox Review?	Support Docs?	IRIS Score	Preli Lite Scre Number of Refs
						0	
						0	
LOAEL: 89.3 mg/kg-day	Low	Yes	Yes			1	189
		Yes	Yes			1	96
BMDL10: 2155 mg/kg-day; BMDL10: 2155 mg/kg-day	Low/Medium; Low/Medium	Yes	Yes	Yes		1	116
						0	
		Yes	Yes			1	36
NOAEL: 273 mg/kg-day	Low	Yes	Yes			1	324
NOAEL: 3.9 mg/kg-day	Medium	Yes	Yes			1	377
NOEL: 15 mg/kg-day	Low	Yes	Yes			1	7
NOAEL: 50 mg/kg-day	Medium	Yes	Yes			1	1259
						0	

					0	
		Yes	Yes		1	98
					0	
BMDL10: 4.6 mg/kg-day	Medium	Yes	Yes	Yes	1	12
		Yes	Yes		1	80
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
NOAEL: 5.71 mg/kg-day	Low	Yes	Yes		1	
NOAEL: 0.34 mg/kg-day	Low	Yes	Yes		1	
NOAEL: 5 mg/kg-day	Low	Yes	Yes		1	20

NOAEL: 14.8 mg/kg-day	Medium	Yes	Yes		1 0 0	252
		Yes	Yes		1	355
LOAEL: 27 mg/kg-day	Low/Medium	Yes	Yes	Yes	1 0 0	24
NOAEL: 85.7 mg/kg-day	Low	Yes	Yes		1	

		Yes	Yes	1	
				0	
				0	
				0	
		Yes	Yes	1	226
		Yes	Yes	1	64
		Yes	Yes	1	74
				0	
				0	
NOAEL: 2.68 mg/kg-day	Medium	Yes	Yes	1	72
		Yes	Yes	1	

					0	
		Yes	Yes		1	
BMDL10: 3.4 mg/kg-day	High	Yes	Yes	Yes	1	66
					0	
					0	
NOAEL: 10 mg/kg-day	Low	Yes	Yes		1	54
					0	
		Yes	Yes		1	
		Yes	Yes		1	
LOAEL: 105 mg/kg-day	Low	Yes	Yes		1	18
		Yes	Yes		1	117
					0	
					0	
		Yes	Yes		1	36
		Yes	Yes		1	81
					0	
					0	
					0	
					0	

				0	
				0	
				0	
NOEL: 0.75 mg/kg-day	Medium	Yes	Yes	1	205
NOEL: 3 mg/kg-day	Medium	Yes	Yes	1	268
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
		Yes	Yes	0	137
				0	
				0	
				0	
				0	

				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
NOAEL: 25 mg/kg-day	Medium	Yes	Yes	1	1154
				0	
				0	
				0	
NOAEL: 10 mg/kg-day	Low	Yes	Yes	1	22
				0	
				0	
				0	
NOEL: 100 mg/kg-day	Low	Yes	Yes	1	77
NOAEL: 3 mg/kg-day	Medium	Yes	Yes	1	900
		Yes	Yes	1	138
LOAEL: 0.5 mg/kg-day	Medium	Yes	Yes	1	522
		Yes	Yes	1	149
		Yes	Yes	1	180
				0	
				0	

						0	
						0	
						0	
		Yes	Yes			0	372
NOEL: 0.3 mg/kg-day	Low	Yes	Yes			1	129
NOAEL: 1 mg/kg-day	Medium	Yes	Yes			1	2510
NOAEL: 50 mg/kg-day	Low	Yes	Yes			1	193
LOAEL: 2 mg/kg-day	Low	Yes	Yes			1	462
NOAEL: 0.2 mg/kg-day	High	Yes	Yes			1	109
						0	
						0	
						0	
NOEL: 0.6 mg/kg-day	Low	Yes	Yes			1	66
						0	
						0	
						0	
						0	
						0	
						0	
		Yes	Yes			1	57
		Yes	Yes			1	14
						0	
NOAEL: 5 mg/kg-day	Low	Yes	Yes			1	92
		Yes	Yes			1	434
BMDL10: 5 mg/kg-day	Medium	Yes	Yes	Yes	Yes	1	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
						0	
		Yes	Yes			1	510
NOEL: 0.15 mg/kg-day	Medium	Yes	Yes			1	665
						0	
BMD05: 4.7 mg/kg-day	Low	Yes	Yes			1	22

NOAEL: 50 mg/kg-day	Medium	Yes	Yes	1 0 0 0	190
		Yes	Yes	1 0 0 0 0 0 0	138
		Yes	Yes	1 0 0	40
		Yes	Yes	0 0 0	81
NOEL: 1.4 mg/kg-day	Low	Yes	Yes	1 0 0 0 0 0 0 0 0 0 0 0 0	104
NOAEL: 50 mg/kg-day	Medium	Yes	Yes	1 0 0	214
NOAEL: 8 mg/kg-day	Low	Yes	Yes	1	187

NOEL: 12 mg/kg-day	Low	Yes	Yes	1 0 0	59
		Yes	Yes	1 0 0 0 0 0	63
LOAEL: 2 mg/kg-day	Low	Yes	Yes	1 0 0	6
		Yes	Yes	1 0 0 0 0 0 0 0 0 0 0 0	547
		Yes	Yes	1 0 0 0 0 0 0 0 0	444
NOAEL: 175 mg/kg-day	Low	Yes	Yes	1	341
		Yes	Yes	1	215

LEL: 0.12 mg mg/kg-day	High	Yes	Yes		1	83
		Yes	Yes		1	
					0	
NOAEL: 2 mg/kg-day	High	Yes	Yes		1	161
					0	
					0	
NOAEL: 900 mg/kg-day	Medium	Yes	Yes	Yes	1	282
		Yes	Yes	Yes	1	240
NOAEL: 423 mg/kg-day	Low	Yes	Yes		1	327
		Yes	Yes		1	78
NOEL: 1.25 mg/kg-day	Medium	Yes	Yes		1	91
		Yes	Yes		1	234
HED (BMDL): 0.053 mg/kg-day	Medium/High	Yes	Yes		1	
NOAEL: 53 mg/kg-day	High	Yes	Yes		1	225

		Yes	Yes	1 0	242
		Yes	Yes	1	59
NOAEL: 1 mg/kg-day	High	Yes	Yes	1 0 0	
NOEL: 15 mg/kg-day	Low	Yes	Yes	1	
NOAEL: 0.01 mg/kg-day	Medium	Yes	Yes	1	837
NOAEL: 0.11 mg/kg-day	Medium	Yes	Yes	1	107
LOAEL: 0.025 mg/kg-day	Medium	Yes	Yes	1 0	184
NOEL: 25 mg/kg-day	High	Yes	Yes	1	1220
NOEL: 4.8 mg/kg-day	Low	Yes	Yes	1	480
		Yes	Yes	1 0 0 0	231

		Yes	Yes	1000	223
NOAEL: 0.043 mg/kg-day	Medium	Yes	Yes	1000	
NOEL: 0.33 mg/kg-day	High	Yes	Yes	1000	99
NOEL: 8.6 mg/kg-day	Low	Yes	Yes	1000	247
NOEL: 0.25 mg/kg-day	Medium	Yes	Yes	1000	238

		Yes	Yes		1	499
		Yes	Yes		1	229
		Yes	Yes		1	38
NOEL: 214.3 mg/kg-day	Low	Yes	Yes		1	88
					0	

		Yes	Yes	1	1060
NOEL: 1000 mg/kg-day	Low	Yes	Yes	1	
LOAEL: 0.35 mg/kg-day	Low	Yes	Yes	1	1105
				0	
		Yes	Yes	1	45
NOEL: 1.25 mg/kg-day		Yes	Yes	1	148
		Yes	Yes	1	19
				0	
NOAEL: 0.007 mg/kg-day	Medium	Yes	Yes	1	
				0	
				0	
				0	
				0	
		Yes	Yes	0	
LOAEL: 0.005 mg/kg-day	Medium	Yes	Yes	1	
				0	
				0	
				0	
				0	
				0	
				0	

NOAEL: 0.0008 mg/kg-day	Medium	Yes	Yes	1	12
		Yes	Yes	1	169
		Yes	Yes	1	
NOEL: 0.9 mg/kg-day	High	Yes	Yes	1	5303
LEL: 50 mg/kg-day	Medium	Yes	Yes	1	73
NOAEL: 3.5 mg/kg-day	High	Yes	Yes	1	
			Yes	0	145

		Yes	Yes		1	170
BMDL05: 63 mg/kg-day	Medium	Yes	Yes	Yes	1	2494
		Yes	Yes		0	2
LEL: 0.36 mg/kg-day	Medium	Yes	Yes		1	605
NOEL: 2.5 mg/kg-day	High	Yes	Yes		1	519
NOEL: 2.5 mg/kg-day	High	Yes	Yes		1	455
					0	
NOAEL: 25 mg/kg-day	Medium	Yes	Yes		1	124
					0	
NOEL: 5 mg/kg-day	High	Yes	Yes		1	91
					0	
NOAEL (ADJ): 3.2 mg/kg-day	Medium	Yes	Yes	Yes	1	154
		Yes	Yes		1	630
					0	
NOEL: 143 mg/kg-day	Low	Yes	Yes		1	831
BMDL: 1.2 mg/kg-day	Medium	Yes	Yes	Yes	1	
LOAEL: 2.7 mg/kg-day	Medium	Yes	Yes		1	250
					0	

		Yes	Yes		1	
		Yes	Yes		1	233
		Yes	Yes		1	206
		Yes	Yes		1	223
					0	
NOAEL: 4.4 mg/kg-day	Medium	Yes	Yes		1	2334
		Yes	Yes		1	19
					0	
					0	
		Yes	Yes		1	149
BMD10: 0.46 mg/kg-day	Low/Medium	Yes	Yes	Yes	1	116
NOAEL: 250 mg/kg-day	Low	Yes	Yes		1	103

		Yes	Yes			1 0	207
		Yes	Yes			0 0	102
NOEL: 0.1 mg/kg-day	Low	Yes	Yes		Yes	1	120
NOEL: 1.5 mg/kg-day	High	Yes	Yes			1	418
NOAEL: 35.8 mg/kg-day	Low	Yes	Yes			1	
		Yes	Yes			1 0 0	48
		Yes	Yes			1	102
		Yes	Yes			1 0	131
LOAEL: 50 mg/kg-day	High	Yes	Yes			1	1553
BMDL05: 10.3 mg/kg-day	High	Yes	Yes	Yes		1 0 0 0	

NOAEL: 1.1 mg/kg-day	Medium	Yes Yes	Yes Yes	Yes		1 1 0	5 8
BMDL10: 24.1 mg/kg-day	Medium	Yes	Yes	Yes	Yes	1	

		Yes	Yes	1	87
LOAEL: 17.9 mg/kg-day	Medium	Yes	Yes	1	451
NOEL: 17.9 mg/kg-day	Medium	Yes	Yes	1	397
NOAEL: 1.4 mg/kg-day	Medium	Yes	Yes	1	216
		Yes	Yes	1	93
NOEL: 5 mg/kg-day	Medium	Yes	Yes	1	
NOEL: 7.3 mg/kg-day	Medium	Yes	Yes	1	338
NOAEL: 159 mg/kg-day	Low	Yes	Yes	1	98
NOAEL: 5 mg/kg-day	High	Yes	Yes	1	8
NOEL: 1000 mg/kg-day	Low	Yes	Yes	1	25
		Yes	Yes	1	324
NOAEL: 0.005 mg/kg-day; NOAEL: 0.01 mg/kg-day	High; High	Yes	Yes	1	

				0	
				0	
NOAEL: 19.1 mg/kg-day	Medium	Yes	Yes	1	21
NOAEL: 50 mg/kg-day	High	Yes	Yes	1	318
LEL: 2 mg/kg-day	High	Yes	Yes	1	387
NOEL: 12.5 mg/kg-day	High	Yes	Yes	1	130
NOAEL: 9.6 mg/kg-day	Medium	Yes	Yes	1	1024
				0	
NOEL: 0.5 mg/kg-day	High	Yes	Yes	1	1886
				0	
NOEL: 11 mg/kg-day	Medium	Yes	Yes	1	247
				0	
BMD2x (ADJ): 3.9 mg/kg-day	Medium	Yes	Yes	1	
		Yes	Yes	0	157
				0	
NOEL: 1 mg/kg-day	High	Yes	Yes	1	186
NOEL: 10 mg/kg-day	High	Yes	Yes	1	295
				0	

		Yes	Yes	Yes	Yes	1 0 0 0	
LOAEL: 10.7 mg/kg-day	High	Yes	Yes	Yes		1	272
LEL: 15 mg/kg-day	Medium	Yes	Yes			1 0	113
NOAEL: 0.15 mg/kg-day	Medium	Yes	Yes			1	563
BMDL10: 0.08 mg/kg-day	Medium	Yes	Yes	Yes	Yes	1	
NOEL: 6.25 mg/kg-day	Medium	Yes	Yes			1 0	506
NOAEL: 14.4 mg/kg-day	Medium	Yes	Yes			1	660
NOAEL: 25.3 mg/kg-day	Medium	Yes	Yes			1	87

NOAEL: 3 mg/kg-day	Medium/High	Yes	Yes	Yes	1	96
NOAEL: 3 mg/kg-day	Medium/High	Yes	Yes	Yes	1	20
					0	
NOAEL: 19 mg/kg-day	Medium	Yes	Yes		1	1130
NOEL: 5 mg/kg-day	Medium	Yes	Yes		1	395
		Yes	Yes		1	
		Yes	Yes		1	170
					0	
BMDL10: 1 mg/kg-day	Medium	Yes	Yes	Yes	1	
		Yes	Yes		1	12
					0	
					0	
					0	
					0	
NOEL: 1.5 mg/kg-day	Medium	Yes	Yes		1	
					0	
NOEL: 50 mg/kg-day	Medium	Yes	Yes		1	
NOEL: 0.03 mg/kg-day	Medium	Yes	Yes		1	536
					0	
NOEL: 5 mg/kg-day	High	Yes	Yes		1	537
					0	
					0	

					0	
					0	
NOAEL (ADJ): 1468 mg/kg-day	Low	Yes	Yes		1	435
NOAEL (ADJ): 2.5 mg/kg-day	Low	Yes	Yes	Yes	1	175
		Yes	Yes		1	484
					0	
		Yes	Yes		1	
					0	
					0	
					0	
					0	
					0	
					0	
		Yes	Yes		1	854
		Yes	Yes		1	
					0	
NOAEL: 5 mg/kg-day	Medium	Yes	Yes		1	16
					0	
		Yes	Yes		1	42
		Yes	Yes		1	72
NOAEL: 110 mg/kg-day	Low	Yes	Yes		1	316
					0	
					0	
		Yes	Yes		0	413
					0	
NOAEL: 10.8 mg/kg-day	Medium				1	444
NOAEL: 21.6 mg/kg-day	Medium	Yes	Yes		1	220
NOAEL: 44 mg/kg-day	Low	Yes	Yes		1	216
					0	
		Yes	Yes		1	216
					0	
NOAEL: 462 mg/kg-day	Medium	Yes	Yes		1	357
NOAEL: 18 mg/kg-day	High	Yes	Yes		1	304

						0	
						0	
NOEL: 0.5 mg/kg-day	High	Yes	Yes			1	77
NOEL: 1 mg/kg-day	High	Yes	Yes			1	1524
NOEL: 0.75 mg/kg-day	High	Yes	Yes			1	180
NOAEL: 1 mg/kg-day	High	Yes	Yes		Yes	1	378
						0	
NOEL: 8.45 mg/kg-day	Low	Yes	Yes			1	241
NOAEL: 2.5 mg/kg-day	High	Yes	Yes			1	198
						0	
NOAEL: 2.22 mg/kg	Low/Medium	Yes	Yes	Yes	Yes	1	6
						0	
		Yes	Yes			1	18
LEL: 0.04 mg/kg-day	Low	Yes	Yes			1	271
						0	
LOAEL: 19 mg/kg-day	Medium	Yes	Yes			1	
NOAEL: 170 mg/kg-day	Medium	Yes	Yes			1	
						0	
						0	
						0	
		Yes	Yes			0	231
		Yes	Yes			1	206
		Yes	Yes			1	435
						0	

NOEL: 21.4 mg/kg-day	Medium	Yes	Yes		1000	353
		Yes	Yes		1000	11
NOAEL: 125 mg/kg-day	Low	Yes	Yes		1	169
NOEL: 3 mg/kg-day	High	Yes	Yes		1000	542
LOAEL: 12.5 mg/kg-day	Medium	Yes	Yes	Yes	1000	112
NOAEL: 15 mg/kg-day	Medium	Yes	Yes		1000	338
NOAEL: 5.85 mg/kg-day	Medium	Yes	Yes		1000	204

NOAEL: 0.05 mg/kg-day	Medium	Yes	Yes	1	434
		Yes	Yes	0	169
				0	
NOAEL: 0.005 mg/kg-day	Medium	Yes	Yes	1	29
				0	
		Yes	Yes	1	440
				0	
NOAEL: 750 mg/kg-day	Low	Yes	Yes	1	115
		Yes	Yes	0	127
				0	
		Yes	Yes	1	10
				0	
		Yes	Yes	1	350
				0	
NOEL: 25 mg/kg-day	Medium	Yes	Yes	1	14
NOEL: 2 mg/kg-day	High	Yes	Yes	1	144
				0	
				0	
				0	
				0	
NOEL: 75 mg/kg-day	Low	Yes	Yes	1	29
NOEL: 2 mg/kg-day	High	Yes	Yes	1	25
NOEL: 0.05 mg/kg-day	Medium	Yes	Yes	1	167
				0	
				0	
				0	
		Yes	Yes	1	309
		Yes	Yes	1	548
LOAEL: 125 mg/kg-day	Low	Yes	Yes	1	94

		Yes	Yes	0	351
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
				0	
LEL: 1 mg/kg-day	Low	Yes	Yes	1	476
				0	
NOEL: 3 mg/kg-day	Medium	Yes	Yes	1	112
NOEL: 2.5 mg/kg-day	Medium	Yes	Yes	1	248
				0	
				0	
NOEL: 0.22 mg/kg-day	Medium	Yes	Yes	1	192
				0	
LEL: 0.04 mg/kg-day	Medium	Yes	Yes	1	
NOEL: 0.625 mg/kg-day	Low	Yes	Yes	1	1222
		Yes	Yes	0	254
NOEL: 1.25 mg/kg-day	Low	Yes	Yes	1	127
				0	
NOAEL: 0.6 mg/kg-day	Medium	Yes	Yes	1	308
				0	
				0	
				0	
NOEL: 2 mg/kg-day	Medium	Yes	Yes	1	85
NOEL: 2 mg/kg-day	Medium	Yes	Yes	1	395
				0	
				0	
				0	
				0	

		Yes	Yes			1	458
		Yes	Yes			1	35
						0	
						0	
LEL: 0.5 mg/kg-day	Low	Yes	Yes			1	135
NOEL: 0.05 mg/kg-day	Medium	Yes	Yes			1	
						0	
NOEL: 900 mg/kg-day	Low	Yes	Yes			1	1807
						0	
		Yes	Yes			0	1744
		Yes	Yes			1	
						0	
						0	
NOAEL: 500 mg/kg-day	Low	Yes	Yes			1	4040
NOEL: 0.01 mg/kg-day	Medium	Yes	Yes			1	186
						0	
NOEL: 97.1 mg/kg-day	Low	Yes	Yes			1	
						0	
		Yes	Yes			1	539
						0	
NOAEL: 200 mg/kg-day	High	Yes	Yes			1	1007
BMDL (HED): 1.4 mg/kg-day	Medium/High	Yes	Yes	Yes	Yes	1	96
						0	
						0	
						0	
						0	
						0	
LOAEL: 0.25 mg/kg-day	Medium	Yes	Yes			1	275
						0	
		Yes	Yes			0	268

NOEL: 250 mg/kg-day	Low	Yes	Yes	1	3
NOEL: 0.79 mg/kg-day	High	Yes	Yes	1	3683
				0	
NOEL: 0.025 mg/kg-day	High	Yes	Yes	1	369
				0	
				0	
				0	
				0	
				0	
				0	
				0	
NOAEL: 12.5 mg/kg-day	Low	Yes	Yes	1	173
NOAEL: 125 mg/kg-day	Low	Yes	Yes	1	566
NOAEL: 125 mg/kg-day	Low	Yes	Yes	1	405
				0	
NOAEL: 0.06 mg/kg-day	High	Yes	Yes	1	1414
				0	
NOEL: 8 mg/kg-day	High	Yes	Yes	1	99
NOEL: 1.8 mg/kg-day	High	Yes	Yes	1	52
LEL: 63.7 mg/kg-day	Medium	Yes	Yes	1	86
NOEL: 1 mg/kg-day	High	Yes	Yes	1	434
NOEL: 10 mg/kg-day	High	Yes	Yes	1	44
		Yes	Yes	1	80
NOEL: 0.2 mg/kg-day	Medium	Yes	Yes	1	342
NOAEL: 15 mg/kg-day	Medium	Yes	Yes	1	
		Yes	Yes	0	1312
NOEL: 250 mg/kg-day	High	Yes	Yes	1	137

						0	
NOAEL: 1.4 mg/kg-day	Low	Yes	Yes			1	787
LOAEL: 7.9 mg/kg-day	Low	Yes	Yes			1	455
		Yes	Yes			1	20
						0	
						0	
NOAEL: 0.33 mg/kg-day	Medium	Yes	Yes			1	
						0	
						0	
NOEL: 0.4 mg/kg-day	Medium	Yes	Yes			1	459
						0	
NOAEL: 1.09 mg/kg-day	Low	Yes	Yes			1	53
						0	
NOEL: 10 mg/kg-day	High	Yes	Yes			1	1242
						0	
NOEL: 0.005 mg/kg-day	High	Yes	Yes			1	36
NOEL: 1.25 mg/kg-day	High	Yes	Yes			1	231
NOEL: 0.15 mg/kg-day	Low	Yes	Yes			1	1253
LEL: 0.0125 mg/kg-day	Low	Yes	Yes			1	673
						0	
						0	
NOAEL: 2 mg/kg-day	Low	Yes	Yes			1	51
						0	
NOAEL: 0.45 mg/kg	Low	Yes	Yes	Yes	Yes	1	21
						0	

NOAEL: 0.08 mg/kg-day	Medium	Yes	Yes		1	213
		Yes	Yes		1 0	
BMDL10: 6 mg/kg-day	Low	Yes	Yes	Yes	1 0	26
		Yes	Yes		1	217
NOAEL: 1 mg/kg-day	Medium	Yes	Yes		1	91
LEL: 0.75 mg/kg-day	Medium	Yes	Yes		1	211

NOEL: 0.3 mg/kg-day	High	Yes	Yes	1	
				0	
NOEL: 10 mg/kg-day	Medium	Yes	Yes	1	
				0	
		Yes	Yes	1	
		Yes	Yes	1	2254
NOAEL: 11.2 mg/kg-day	Medium	Yes	Yes	1	
				0	
				0	
		Yes	Yes	1	
		Yes	Yes	0	840
NOEL: 1.25 mg/kg-day	Medium	Yes	Yes	1	259

NOEL: 25 mg/kg-day	High	Yes	Yes	1	227
		Yes	Yes	1	
				0	
				0	
NOEL: 4.2 mg/kg-day	High	Yes	Yes	1	124
				0	
				0	
NOEL: 316 mg/kg-day	Low	Yes	Yes	1	327
				0	
				0	
NOEL: 150 mg/kg-day	Low	Yes	Yes	1	92
NOEL: 150 mg/kg-day	Low	Yes	Yes	1	38
				0	
NOAEL: 279 mg/kg-day	Low	Yes	Yes	1	44
				0	
				0	

NOEL: 5 mg/kg-day	High	Yes	Yes	Yes	1	1580
LEL: 1.5 mg/kg-day	High	Yes	Yes		1	483
		Yes	Yes		1	
LEL: 0.625 mg/kg-day	High	Yes	Yes		1	12
					0	
NOEL: 1.99 mg/kg-day	High	Yes	Yes		1	96
					0	
NOEL: 0.23 mg/kg-day	Medium	Yes	Yes		1	
					0	
NOAEL: 10 mg/kg-day	Medium	Yes	Yes		1	111
LEL: 500 mg/kg-day	Medium	Yes	Yes		1	
					0	
NOEL: 5 mg/kg-day	Low	Yes	Yes		1	524
NOAEL: 0.14 mg/kg-day	Medium	Yes	Yes		1	1241
					0	
NOAEL: 0.4 mg/kg-day	Low	Yes	Yes		1	210
					0	

NOEL: 25 mg/kg-day	Medium	Yes	Yes	1	14
LOAEL: 0.317 mg/kg-day	High	Yes	Yes	1	421
				0	
		Yes	Yes	1	2056
NOEL: 0.1 mg/kg-day	Low	Yes	Yes	1	32
NOEL: 0.1 mg/kg-day	Low	Yes	Yes	1	146

NOEL: 6.25 mg/kg-day	High	Yes	Yes		1	284
NOAEL: 0.34 mg/kg-day	Low	Yes	Yes		1	89
					0	
LEL: 0.05 mg/kg-day	Medium	Yes	Yes		1	
					0	
NOEL: 500 mg/kg-day	Medium	Yes	Yes		1	
					0	
NOEL: 0.1 mg/kg-day	High	Yes	Yes		1	
					0	
NOEL: 2.5 mg/kg-day		Yes	Yes		1	148
					0	
					0	
NOEL: 5.01 mg/kg-day	Low	Yes	Yes		1	58
					0	
		Yes	Yes		1	24
		Yes	Yes		1	58
		Yes	Yes		0	15
LED: 639 mg/kg-day	Low	Yes	Yes	Yes	1	
					0	
		Yes	Yes		0	187
		Yes	Yes	Yes	0	
		Yes	Yes		0	235
					0	
NOAEL: 136 mg/kg-day	Low/Medium	Yes	Yes		1	161
NOEL: 0.025 mg/kg-day	Medium	Yes	Yes		1	

		Yes	Yes	100	
		Yes	Yes	1	153
BMDL5: 0.000857 mg/kg-day; BMDL5: 0.001472 mg/kg-day	High; High	Yes	Yes	10	363
NOEL: 15 mg/kg-day	High	Yes	Yes	100	
NOEL: 2.5 mg/kg-day	Medium	Yes	Yes	10	101

NOAEL: 0.07 mg/kg-day	High	Yes	Yes		1	
					0	
NOEL: 0.2 mg/kg-day	Low	Yes	Yes		1	226
LOAEL: 0.14 mg/kg-day	Medium	Yes	Yes		1	2001
					0	
					0	
					0	
					0	
					0	
					0	
NOAEL: 9.5 mg/kg-day	Medium	Yes	Yes		1	65
					0	
					0	
					0	
					0	
					0	
					0	
					0	
					0	
NOEL: 6 mg/kg-day	Low	Yes	Yes		1	276
					0	
					0	
					0	
		Yes	Yes		1	230
					0	
NOEL: 0.2 mg/kg-day	Medium	Yes	Yes		1	179
NOAEL (ADJ): 71 mg/kg-day	L	Yes	Yes	Yes	1	
NOEL: 30 mg/kg-day	Medium	Yes	Yes		1	134
NOAEL: 125 mg/kg-day					1	1321
					0	
					0	
		Yes	Yes		1	348
		Yes	Yes		1	
					0	
		Yes	Yes		1	90
					0	
					0	

		Yes	Yes			1	8
		Yes	Yes			1	49
NOAEL: 5 mg/kg-day	Medium	Yes	Yes			1	
						0	
		Yes	Yes			0	60
NOAEL: 1.6 mg/kg-day	High	Yes	Yes			1	2399
						0	
						0	
		Yes	Yes			0	61
						0	
NOEL: 1 mg/kg-day	High	Yes	Yes			1	67
BMDL (1SD): 1.8 mg/kg-day	Medium/High	Yes	Yes	Yes	Yes	1	
						0	
		Yes	Yes			0	963
						0	
						0	
NOAEL: 316 mg/kg-day	Medium	Yes	Yes			1	92
						0	
						0	

LOAEL: 22.32 mg/kg-day	Low	Yes	Yes		1	
		Yes	Yes		1	196
		Yes	Yes		1	3104
		Yes	Yes		1	258
		Yes	Yes		1	258
		Yes	Yes		1	144
		Yes	Yes		1 0 0 0	76

		Yes	Yes	1 0 0	87
		Yes	Yes	1	357
		Yes	Yes	1	3
NOEL: 3.75 mg/kg-day	High	Yes	Yes	1 0	138
NOEL: 0.2 mg/kg-day	Medium	Yes	Yes	1 0 0	150
NOAEL: 20 mg/kg-day	Low	Yes	Yes	1	117
NOAEL: 2.5 mg/kg-day	Low	Yes	Yes	1 0 0	19
NOAEL: 50 mg/kg-day	Low	Yes	Yes	1 0	76
		Yes	Yes	1	38
		Yes	Yes	0 0	111

NOEL: 5 mg/kg-day	High	Yes	Yes	1 0 0	207
NOEL: 0.5 mg/kg-day	Medium	Yes	Yes	1	279
NOEL: 2.5 mg/kg-day	Medium	Yes	Yes	1 0 0	
NOEL: 0.3 mg/kg-day	High	Yes	Yes	1 0 0	15
		Yes	Yes	1	2
		Yes	Yes	1	57

		Yes	Yes	1	249
NOEL: 0.05 mg/kg-day	Medium	Yes	Yes	1	1014
NOEL: 12.5 mg/kg-day	Medium	Yes	Yes	1 0 0	187
NOEL: 0.45 mg/kg-day	High	Yes	Yes	1 0	42
		Yes	Yes	1	2446
		Yes	Yes	1	18
LOAEL: 12.5 mg/kg-day	Low	Yes	Yes	1 0	361
		Yes	Yes	1	5

		Yes	Yes			1	7
		Yes	Yes			1	5
						0	
						0	
NOEL: 12.5 mg/kg-day	Medium	Yes	Yes			1	
BMDL (1SD): 0.29 mg/kg	Low	Yes	Yes	Yes	Yes	1	95
LOAEL: 8.3 mg/kg-day	Low	Yes	Yes			1	347
						0	
		Yes	Yes			1	3
						0	
						0	
NOEL: 0.75 mg/kg-day	Medium	Yes	Yes			1	430
NOAEL: 3 mg/kg-day	Medium	Yes	Yes			1	
						0	
		Yes	Yes			0	69
						0	
						0	
NOEL: 0.007 mg/kg-day	High	Yes	Yes			1	
						0	
						0	

						0	
NOEL: 5 mg/kg-day	High	Yes	Yes			1	113
		Yes	Yes			1	
NOAEL: 25 mg/kg-day	Medium	Yes	Yes			1	110
BMDL: 93 mg/kg-day	Medium/High	Yes	Yes			1	226
						0	
NOAEL: 0.0084 mg/kg-day	Low	Yes	Yes		Yes	1	772
						0	
						0	
		Yes	Yes			0	432
		Yes	Yes	Yes		0	
NOEL: 2 mg/kg-day	High	Yes	Yes			1	22
NOEL: 0.026 mg/kg-day	Medium	Yes	Yes			1	333
		Yes	Yes			1	298
NOAEL: 0.015 mg/kg-day	Low	Yes	Yes			1	216
LOAEL: 1562 mg/kg-day	Medium	Yes	Yes			1	124
NOEL: 7 mg/kg-day	Medium	Yes	Yes			1	618
						0	
						0	
NOEL: 0.25 mg/kg-day	High	Yes	Yes			1	
						0	
						0	
						0	
						0	
						0	
						0	
		Yes	Yes			0	1155
						0	
						0	
						0	
						0	

		Yes	Yes	1000	
NOAEL: 27 mg/kg-day	Medium	Yes	Yes	1000	3
NOAEL: 82.7 mg/kg-day	Medium	Yes	Yes	1000	295

NOEL: 0.9 mg/kg-day	High	Yes	Yes			1	181
						0	
NOAEL: 15 mg/kg-day	Low	Yes	Yes			1	402
NOEL: 3.75 mg/kg-day	Low	Yes	Yes			1	161
NOEL: 7.5 mg/kg-day	Medium	Yes	Yes			1	
NOEL: 13.3 mg/kg-day	Low	Yes	Yes			1	
						0	
NOEL: 5 mg/kg-day	Medium	Yes	Yes			1	43
NOEL: 2 mg/kg-day	Medium	Yes	Yes			1	
NOAEL: 5 mg/kg-day	Low	Yes	Yes			1	187
NOEL: 5 mg/kg-day	Medium	Yes	Yes			1	131
NOEL: 50 mg/kg-day	Low	Yes	Yes			1	363
NOEL: 1.25 mg/kg-day	High	Yes	Yes			1	295
		Yes	Yes	Yes	Yes	1	
						0	
		Yes	Yes			0	2
		Yes	Yes			0	79
		Yes	Yes			1	383
		Yes	Yes			1	44
		Yes	Yes			0	1040
NOEL: 25 mg/kg-day	High	Yes	Yes			1	46
						0	
NOEL: 2.5 mg/kg-day	High	Yes	Yes			1	1462

NOAEL: 75 mg/kg-day	Low	Yes	Yes	1	
				0	
NOAEL: 1 mg/kg-day	Medium	Yes	Yes	1	497
NOEL: 0.05 mg/kg-day	Medium	Yes	Yes	1	37
		Yes	Yes	1	37
		Yes	Yes	1	
				0	
				0	
				0	
		Yes	Yes	0	106
				0	
		Yes	Yes	0	122
				0	
		Yes	Yes	1	
LEL: 25 mg/kg-day	High	Yes	Yes	1	1426
NOEL: 0.38 mg/kg-day	Medium	Yes	Yes	1	77
				0	
				0	
				0	
NOEL: 2.5 mg/kg-day	High	Yes	Yes	1	2
				0	
				0	
NOAEL: 0.015 mg/kg-day	High	Yes	Yes	1	674
NOAEL: 0.015 mg/kg-day	High	Yes	Yes	1	30
		Yes	Yes	1	6
		Yes	Yes	0	130
NOEL: 8.86 mg/kg-day	High	Yes	Yes	1	93
NOEL: 2.5 mg/kg-day	Medium	Yes	Yes	1	1307
				0	
LOAEL: 0.014 mg/kg-day	Low	Yes	Yes	1	10
				0	

NOAEL: 55.7 mg/kg-day	Low	Yes	Yes	1	956
NOAEL: 0.52 mg/kg-day	High	Yes	Yes	1	992
				0	
				0	
NOAEL: 3.57 mg/kg-day	Medium	Yes	Yes	1	263
NOAEL: 20.4 mg/kg-day	Medium	Yes	Yes	1	228
				0	
NOEL: 30 mg/kg-day	Medium	Yes	Yes	1	107
NOAEL: 0.05 mg/kg-day	Low	Yes	Yes	1	1552
				0	
				0	
				0	
				0	
NOAEL: 190 mg/kg-day	Medium	Yes	Yes	1	942
LOAEL: 2.5 mg/kg-day	Low	Yes	Yes	1	271
NOAEL: 200 mg/kg-day	Medium	Yes	Yes	1	
				0	
				0	
				0	
				0	
				0	
NOEL: 2.49 mg/kg-day	High	Yes	Yes	1	10
		Yes	Yes	1	55
				0	
				0	
NOEL: 7 mg/kg-day	High	Yes	Yes	1	158
		Yes	Yes	1	33
				0	
				0	

NOEL: 1.25 mg/kg-day	Medium	Yes	Yes			1000	315
NOEL: 0.1 mg/kg-day	High	Yes	Yes			10000	14
		Yes	Yes			100	3
		Yes	Yes			10000	261
NOAEL: 14 mg/kg-day	Medium	Yes	Yes			1	
NOEL: 3.13 mg/kg-day	Medium	Yes	Yes			10	
LOAEL: 0.0012 mg/kg-day	Medium	Yes	Yes			1	70
NOEL: 0.5 mg/kg-day	Low	Yes	Yes			100	4
		Yes	Yes			100	8
		Yes	Yes	Yes	Yes	1	1

		Yes	Yes	Yes	Yes	1		213
		Yes	Yes	Yes		1		8
						0		
		Yes	Yes	Yes	Yes	1		29
		Yes	Yes	Yes	Yes	1		
		Yes	Yes	Yes	Yes	1		77
						0		
						0		
NOEL: 1 mg/kg-day	Medium	Yes	Yes			1		839
						0		
						0		
NOEL: 8 mg/kg-day	High	Yes	Yes			1		
						0		
						0		
NOEL: 5 mg/kg-day	Low	Yes	Yes			1		53
						0		
						0		
						0		
						0		
						0		
						0		
BMDL: 238 mg/kg-day	Medium	Yes	Yes	Yes		1		
						0		
						0		

		Yes	Yes		1 0	22
NOEL: 0.75 mg/kg-day	High	Yes	Yes		1	121
NOAEL: 17 mg/kg-day	Low	Yes	Yes		1 0 0 0	199

					0	
					0	
					0	
NOAEL: 1.275 mg/kg-day	High	Yes	Yes		1	
NOEL: 1.2 mg/kg-day	High	Yes	Yes		1	1
					0	
		Yes	Yes		1	1
		Yes	Yes		1	64
					0	
					0	
BMD10: 0.03 mg/kg-day	High	Yes	Yes	Yes	1	686
					0	
		Yes	Yes		1	1
					0	
					0	
		Yes	Yes		1	359
					0	
		Yes	Yes		0	
					0	
LOAEL: 349 mg/kg-day	Medium	Yes	Yes		1	304
					0	
		Yes	Yes		0	860
NOEL: 0.33 mg/kg-day	High	Yes	Yes		1	57
		Yes	Yes		1	19
		Yes	Yes		0	22

		Yes	Yes	0	703
NOEL: 0.75 mg/kg-day	High	Yes	Yes	1	111
				0	
				0	
				0	
				0	
				0	
		Yes	Yes	0	
LOAEL: 2.8 mg/kg-day	Medium	Yes	Yes	1	
				0	
				0	
				0	
NOAEL: 0.89 mg/kg-day	Low	Yes	Yes	1	4
NOEL: 1 mg/kg-day	Low	Yes	Yes	1	48
NOEL: 2.5 mg/kg-day	High	Yes	Yes	1	
		Yes	Yes	1	
		Yes	Yes	1	235

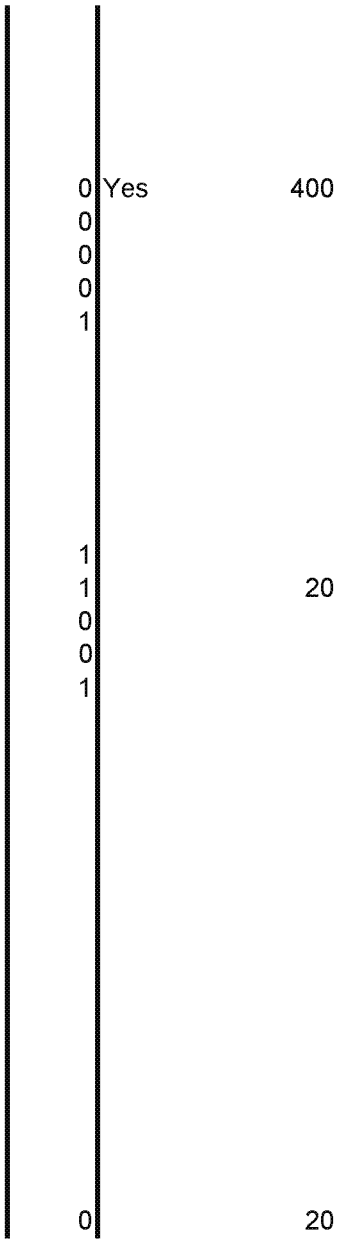
NOAEL (HED): 0.09 mg/kg-day	Medium	Yes	Yes			1	1407
LOAEL: 0.029 mg/kg-day	Low	Yes	Yes			1	3347
NOAEL: 179 mg/kg-day	Medium	Yes	Yes	Yes		1	
						0	
LOAEL: 0.91 mg/kg-day	Medium/High	Yes	Yes	Yes		1	

NOAEL: 24.3 mg/kg-day	Medium	Yes	Yes		1	23
LOAEL: 3.48 mg/kg-day	Low	Yes	Yes		1	56
LOAEL: 25 mg/kg-day	Medium	Yes	Yes		1	421
					0	

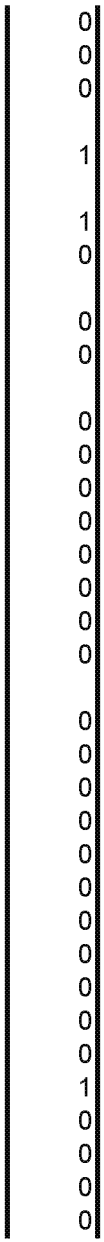
IRIS			
minary rature ening			
Lit Search Span	Lit Score	Listed in CAPCOA - 1993	REL (ug/m3)
	0		
	0		
	1		
	1		
	1	Yes	1000
	0		
	1		
	1		
	1		
	1		
	1		
	0		

0		
1	Yes	70
0		
1		
1		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
0		
1		

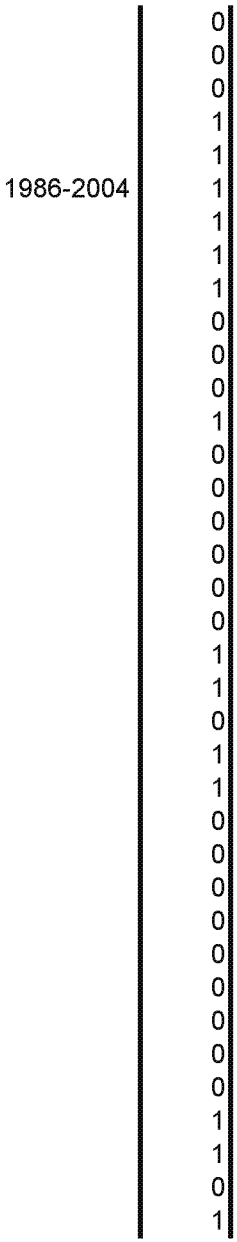

1
0
0
1
1
0
0
0
Yes
0.8

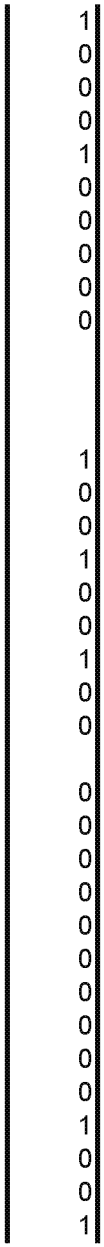

0 Yes 400
0
0
0
1
1
1 20
0
0
1
0 20

0		
0		
1		
0		
0		
1		
0		
0	Yes	800
0	Yes	3000
1		
1		
0		
0		
1		
1		
0		
0		
0		
0		

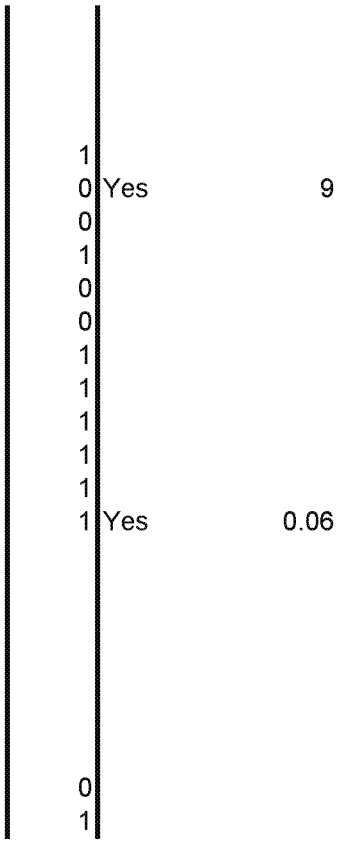

0
0
0
1
1
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
1
0
0
0
0

0		
0		
0		
0		
0		
0		
0		
0		
1		
0		
0		
0		
1		
0		
0		
0		
1		
1		
1		
1		
1		
1		
1	Yes	0.07
0		
0		

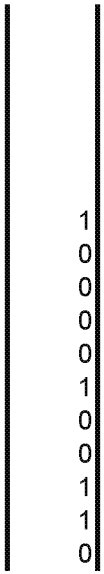

1986-2004


1997-2004

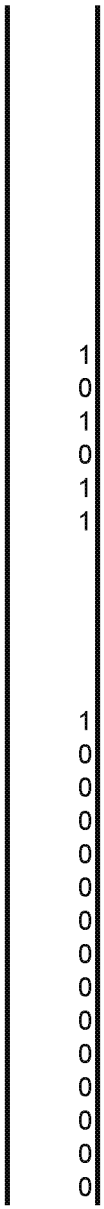
1 0 0		
1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 1	Yes	20


1
0 Yes 9
0
1
1
0
0
1
1
1
1
1
1 Yes 0.06
0
1

	1	Yes	5
	0		
	1		
	0		
	0		
	0		
	0		
	1		
	1		
	1		
	0		
	1		
	1		
	1		
	0		
	0		
	0		

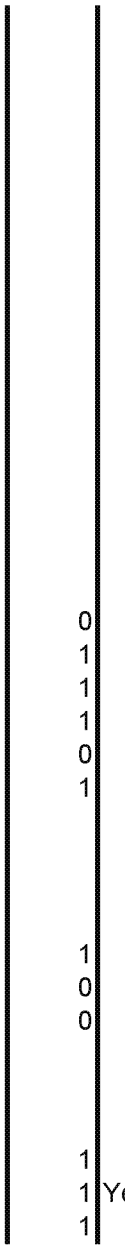

1
0
0
0
0
1
0
0
1
1
0

1	Yes	200
1		
1		
1		
0		

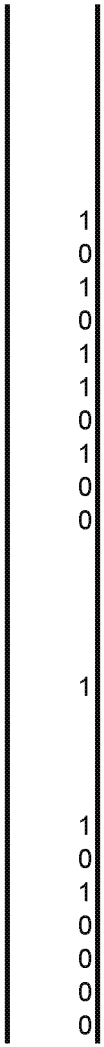

1
0
1
0
1
1
1
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0

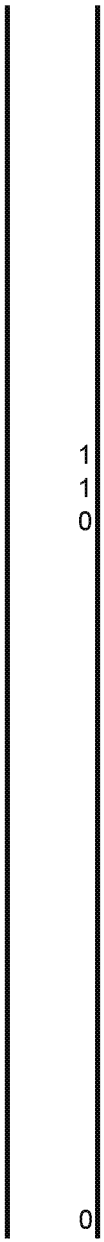
	1	Yes	0.03
	1		
	0		
1987-2002	1		
	1		
	0		
	1		

1992-2002	1 1 1 1 1 1 0 1 0 1 0 1 1 0 1 0	Yes	60
	1 0		



	0		
	1		
	1		
	1		
	0		
	1		
1998-2005	1		
	0		
	0		
	1		
	1	Yes	0.007
	1		


1
0
1
0
1
1
0
1
0
0
1
1
0
1
0
0
0
0


1
1
0
0

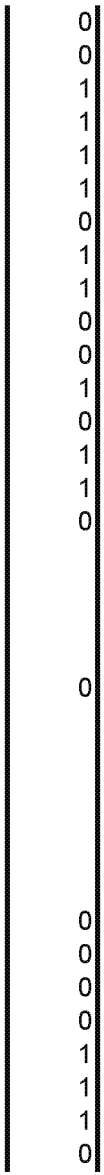
0		
1		
0		
1		
1		
1	Yes	5
1		
0		
0		
1		
0		
0		
1		
1		
0		
1		
0		
0		
0		
0		
0		
0		
0		
1		
0	Yes	0.02
0		
0		

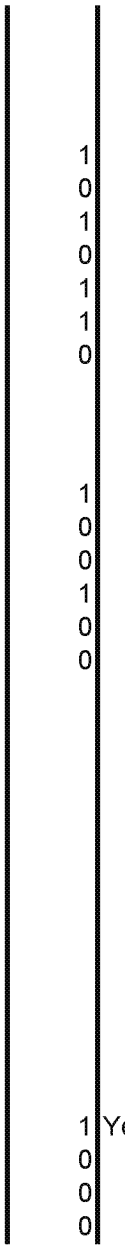
0		
0		
1		
1		
1		
1		
1		
0		
1		
0		
1		800
0		
0	Yes	40
1		
0		
1		
1		
0		

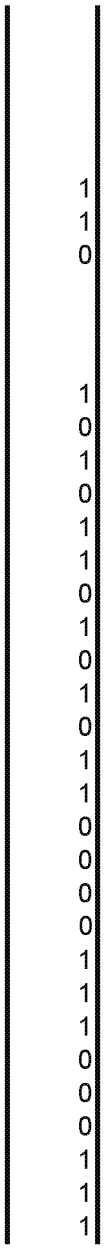
0			
0			
0			
0			
1			
1			
0			
1			
0			
1			
0	Yes		0.00004
1	Yes		0.2
1			

1		0.6
1		
0		
1		
1		
0		
1		
0		
0	Yes	300
1		
0		
0	Yes	0.4
0		
0		
0		
0		
1		
0		
1		
0		
0		

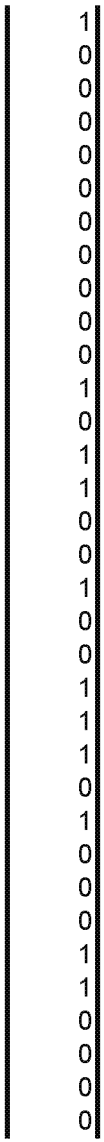
	0		
	0		
	1	Yes	0.002
	1	Yes	0.2
	1		
	0		
	0		
	0		
	0		
	0		
	0		
	0		
	1		
	0		
	0		
	1		
	0		
	1		
	1		
	1		
	0		
	0		
	1		
	0		
1996-2003	1		
	1		
	1		
	0		
	1		
	0		
	1		
	1		


0
0
1
1
1
1
0
1
1
0
0
1
0
1
1
0
0
0
0
0
1
1
1
0


1
0
1
0
0
1
1
0
1
0
0
0
1
0
0
0
1 Yes 400
0
0
0



5
3


1
0
0
0
0
0
0
0
0
0
0
0
1
0
1
1
1
0
0
1
0
0
0
1
1
1
0
1
0
0
0
1
1
0
0
0
0

1	Yes	3
1		
0		
0		
1		
0		
0		
1		
0		
1		
0	Yes	30000
0		
0		
1		
1		
0		
0		2000
0		
1		
0		
1		400
1	Yes	70
0		
0	Yes	300
0	Yes	60
0	Yes	90
0	Yes	30
1		
0		
1		